

679-732



407 A

N. villa? on Q. coccinea Yaphank.  
Sept. 3 1897.

Hd. .6 ± length 3.3 to head Pale + almost  
a name of age d. head 17 brown.

Hair fine, off another little Y back of head  
black tipped egg shell singly in back of head  
lappet-like tip of a lobe between edge & midrib  
brown tinted. Elliptical, flat 1.0 x .6 shell white  
Other within (double, color as the latched code  
hd most are hexagonal. Ate in P.M.  
Hd 4, length 2 shed Aug 9 like K

Head, an  
nally dissected  
tripe.

685

Shed Sept 16 Like code in I taken for red  
Cites, July 30. 4's. skin smooth  
ridges tubercularly angled in sq.  
Hibe shed Aug 3 (different) Elliptical

narrowed behind, tail quadrate  
General shape of red. Cites but  
short distinct pointed paired  
black setae on D. depressed spot  
large sharp, deep as a red  
forming the usual latched ridge  
appearance of 1 granule, but not  
smooth & clean, instead all  
fine papillae, left on the



407 A

N. villa? on Q. coccinea Yaphank.  
Sept. 3 1897.

Hd. .6  $\pm$  length 3.3 to head Pale + almost

a name of opaque d. band, i? brown.

Hairs fine, spinulose, pale. ①② fine  
black tipped, next ③ with elongate  
lappet-like base. ④ 9 and 11 also slightly  
brown tinted.

Other without brown next, length 4 and  
hd next over .6 mm

Hd. 4, length 2.5 with same, present, as d.  
band. An unpaired brown dash 7 longitudinal  
nearly dusky. Hd with faint brown  
stripe.

Sept 16 Length 4.3 Hd .6 Same

Hibernated & died



Another little Y backer. Shed  
on white silk July 31 1896 2.8 in  
egg shell singly in back of leaf near  
tip of a lob. between edge & midrib  
Egg head, flat 1.0 x .6 shell white  
(doubtless color as the hatched code  
is so) rets. obscure linear rounded  
irregular. Ate in P.M.  
Shed Aug 9 like K

685

Like code in I taken for red  
cross. July 30. 4's. skin smooth  
ridges tuberculately angled on seg.  
Shed att 3 (different) Elliptical  
narrowed behind, tail gradate  
General shape of red cross but  
short distinct pointed paired  
black setae on D. depressed & not  
large sharp, deep as in red +  
forming the usual lathred ridge  
apparent of 1 granule, but not  
smooth & clear, instead all  
fine papillae, esp. on the



ridges, flattish, fringed, the granules seeming indistinct. all frosty whitish, no marks

Aug 3 1.0

" 4 1.2

" 5 1.3

" 6 1.6

" 7 1.6 to 2.0

" 8 " "

" 9 1.7 eat

" 10 2.2 "

" 11 2.5 "

" 12 " still

" 13 2.7 eaty

" 14 3.2 "

" 15 3.6 "

Shed Aug 9 still setae ③

shad black distinct.

skin nearly granular

as in next. Papillae

inf around margin ②.

Colours present a faint

red shade centrally

on the ridges ①. Aug 11

a large red patch, the

depressed spaces in it pale

Aug 11 large normal patch

Shed Aug 13. Sep. space large

normal, ridges beginning

to be more than 1 granule

setae still visible. Tail

quadrate. Whitish, only a little green.

a large round faint reddish patch

6-9. Aug 14. Large red patch

yellow bordered, the yellow reaching

back along the ridge.

[Evidently  
red + 2  
put out]





Black oak J's exilis 679 affinis 683-676. tettispala  
White oak J's hammuli auto  
on both lobelias

679

*Apatela exilis*? on *Q. coccinea* Southaven  
L.I. July 25-1897. Hd 2.2 pale whitish,  
mouth reticulate with chocolate brown  
dentist is a dash each side vi. suture i  
front. Tubercles prominent, slightly conic,  
high, all single haired but vi which bears  
two four hairs. Tarsus whitish, powdered  
with chocolate brown, tubercles reddish at  
base. A brown line above iii, defining a pale  
space above a broken one in the median  
area 3-12 just where it comes to join d.  
line, prominent on 2. d. line geminate, obscure  
suffuse, single 12-13 and stronger. Small  
oblique dashes before i, 5-11. Indistinct  
super. 1 ant. stig from base curving up d.  
on 13. A s-v shade above vi. Feet pale.  
Hairs white, not long. Vents alike  
Shed Aug 2. Like the description of *exilis*.



June 18  
1898

680

Noctuid? on *Nyssasylvatica*, Moriches  
L.I. July 30, 1897. Green, a little flattened  
tapering behind. Feet normal. Warts.

Hd 5 round green. Flattened, green, trace of

white side line. i 3 hairs, ii single, iii many

Hd 9 green, narrow white sd line below

ii and small interseg. d dots: clear green

Warts same, hair pale fine, partly dusky

i 2 hairs; ii, iv, v, single; iii, vi many, band

Warts iii very prominent from bulging of sides

Hd 1.6 green; d interseg single & paired

adducal segmental white dots. sd

line 3-13, white just below ii anal

feet distinct, segs from above. Warts the

same. Hair fine, pale

Hd 2.2 Rounded, whitish green, smooth

white; a tiny black dot in middle

of each lobe before. Much less hairy in

appearance. i of several hairs, but the

best or small as to be not seen by

680

SMITHSONIAN INSTITUTION.

UNITED STATES NATIONAL MUSEUM.

MEMORANDUM.

Egg on *Nyssa* Rock Creek Md

Aug 12 1898. Laid on back of

leaf in crotch of new.

Circular, flat, slightly arched,

Surface with low angular ribs

about 66, poorly marked, not

high, cut into a series of clayey

transversely, elliptical beads

Holms between traceable as

a wavy line. Line rather

straight & distinct, diminishing

in number toward vertex, the

microphyl a confused

mass of beads

was wrong. Is it not Polygrammate?



14

680

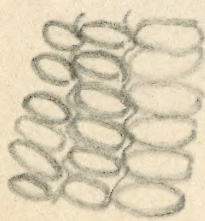
SMITHSONIAN INSTITUTION.

UNITED STATES NATIONAL MUSEUM.

## MEMORANDUM.

Egg on *Nyssa* Rock Creek Md  
 Aug 12 1898. Laid on back of  
 leaf in crotch of vein.

Circular, flat, slightly arched.  
 Surface with low angular ribs  
 about 66, poorly marked, not  
 high, cut into a series of clay-like  
 transversely, elliptical beads.  
 Grooves between traceable as  
 a wavy line. Line rather  
 straight & distinct, diminishing  
 in number toward vertex, the



microscopically a confused  
 mass of beads

was wrong. Is it not *Polygammate*?



June 18  
1898

680

Noctuid? on *Myrsine*, Moriches  
L.I. July 30, 1897. Green, a little flattened  
tapering behind. Feet normal. Warts.  
Hd 5. round green. Flattened, green, trace of  
white side line. i 2 hairs, ii single, iii many  
Hd 9. Green, narrow white sd line below  
ii, and small antecy. d dots: clear green  
Warts same, hair pale fine, partly dusky  
i 2 hairs; ii, iv, v, single; iii, vi many, head  
vent iii very prominent from bulging of side  
Hd 1.6 Green; d antecy single & paired  
adducal segmental white dots. Sd  
line 3-13, white just below ii. Anal  
feet divergent, ~~seen~~ from above. Warts the  
same. Hair fine, pale  
Hd 2.2 Rounded, whitish green, smooth  
white; a tiny black dot in middle  
of each lobe before. Much less hairy in  
appearance. i of several hairs, but the  
best or small as to be not seen by

lens; ii a long strong hair; iii a strong  
hair and a few small weak ones; iv a  
tiny hair; v a strong hair; vi several  
small hairs. Thoracic warts similarly  
reduced. Clean green, d. interseg white  
not elongated, ad-d round; sd line  
straight, yellowish white. Warts iii  
shiny, spiracles reddish. Clasper of  
abd. feet elongate. In some spiracles  
warts v & vi abd. & iii, iv & v, vi of thorax  
are surrounded narrowly by red-brown.  
Hare d. dusky, pale 5-v. Later more  
whitish, less clear green, 2 and hd. a  
little yellowish marks less contrasted.  
Aug 1 Hd still 2.2 divided with broad purplish along  
blotches of white dots confluent in groups  
over the face of body lobes; same in form &  
is still greenish. Body greenish white to v,  
all white orange. A white d. lateral line,  
stop region all white, broken obscurely by  
greenish in invasion of the faint annulets



A series of numerous purple-brown spots  
 irregular geminate row d. of 4 the second  
 single, before; behind; above & below  
 sd line, small, blotched; before & behind  
 iii; over most of sd space forming a sharp  
 line under to the white stig space,  
 marked up in seg. incisions. Setae all  
 dark. Dorsum faint purplish shaded  
 all over.

Bred in mud like Harrisiana throwing out  
 the mud spun up in small irregular  
 balls.

Hd 3 Whitish with green tinge - same, flat  
 parts same, iii large, many, hairish.

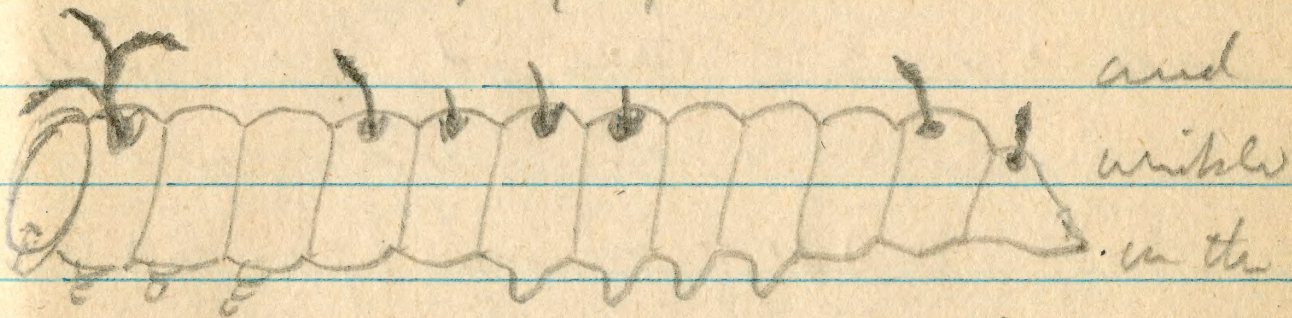
Hd 2 Whitish, body a little green tinted at  
 end of stige. Vents small but same, i line  
 behind, iii many

Larvae to shed	Hd. 2	Length	2.0 mm	✓
	Hd. 3		4.8 "	✓
	Hd. 5	"	6.5 "	✓
	Hd. 9	"	8.5 "	✓
	Hd. 1.6	"	14.0 "	✓

Out June 10 1898 Cat. no. 15033

681

Horn a black oak Yaphank L. I Aug 2  
 1897. Chorus 3 times, the upper wrinkles, setae  
 and thickenings; 5, 12, 13 horn also clothed



outer part, 7 moderate, 6, 8, very short, 9, 10  
 without even a plate. Hd same, brown  
 w. m. Body firm, dorsal longitudinally  
 streaked with red and yellow, a lighter  
 space d on 10-11 and darker 12-13. Feet and  
 leg-plates and horns black. Anal feet diverge  
 The short horns 6-8, 13 coverage in pairs on the  
 back. Shield of 2, 5, 13 consolidated, other small  
 paired. Tiny black dots represent i on 9 & 10.  
 i all around cephalum a seg. No spin on c-horn  
 shed Aug 5 - Hd. narrowing above, not bilobed, all  
 pale brown; w 1 m. Body with short triangular  
 spines, black tipped. Anal feet slender  
 divergent. Smooth, all streaked with



lumen, yellowish, narrow white d. line  
extending into patch 4-8, a line on 8-9  
9-11, divided into 2 to a sd line to  
plate. Anal feet up. Side comprising  
streaked except trace sd line pale.  
Feet concolorous, anal darker reddish.  
Gravid Aug 12 Hd high 1.7 mm pale  
whitish a brownish blotched band of light  
slit up angle of each lobe and 2 pair of  
spots each side no suture above anal. A  
small black on the whitish ground. Ch. horn  
short, with 3 separate black tips. Sides  
streaked faint yellow. Horn with a brownish  
double sd yellow streak in thorax. Yellow  
d. band 1 & 2 between horn, narrow 3-4, 5-8,  
broken 8; 8-11, furcate with sd  
bands 12-13, its edging dark. Abd feet  
concolorous, the pale whitish. Anal feet  
long, reddish tipped. Hd lower than joint 2.  
Gravid Aug 12 Hd 2.6 Same. Mottled with streaks  
& dots of brown on a dull greenish ground, dark  
a whitish around spiracles on 5, 9 & 10

10; a straight pale substig line; setae long  
on the sides. Hd whitish, punctate dot aggregating  
into an irregular blotched band on 15 of lobe.  
Ch. horn short, red, with 3 black tips. D. white  
as before, the large pale line with a greenish d. line and  
the dorsal, all dull red. A faint yellowish  
shading esp. under the dark of 12-13 and  
a little on side of thorax & a faint yellow  
anal feet divergent, elevated, white above  
Shed Aug 17 Hd 3.8 Same, no cervical  
horns. = 406. Same form of v.



1.0-1.8 ✓ 6.0-9.3 ✓ More black oak and  
 1.6-2.8 ✓ 9.3-13.5 ✓ Chestnut and Rose  
 2.4-3.9 ✓ 13.5-18.3 ✓ Kuntz Lake, Aug 13

685 (size 70 1/2)

Code at Yaphank, L.I., on black oak.  
 As like *S. pygmaea* that supposed to  
 be a var. of it till some were  
 brought in for comparison.

682 B  
 Aug 3 3.3 cat  
 " 4 3.5 wide  
 " 5 4.1 cat  
 " 6 3.9 wide  
 (not a var.)  
 Elliptical, rather narrow before &  
 behind, top moderate, lat. a  
 little broader, s. s. retracted small

682 C  
 Aug 8 8.0 cat  
 " 9 8.6 "  
 " 10 9.6 "  
 " 11 9.3 "  
 " 12 9.3 "  
 " 13 9.3 "  
 " 14 9.3 "  
 " 15 10.5 cat  
 " 16 11.5 "  
 " 17 12.2 "  
 " 18 13.5 "  
 " 19 12.0 "  
 " 20 12.0 "  
 " 21 " "  
 " 22 " "  
 " 23 " "  
 " 24 13.3 wide  
 " 25 12.7 cat  
 " 26 14.4 "  
 " 27 14.8 "  
 " 28 15.5 "  
 " 29 16.5 "  
 " 30 17.5 "  
 " 31 " "  
 Sep 1 18.3 "  
 " 2 18.0 "  
 " 3 " "  
 " 4 " "  
 " 5 " "  
 Horn ① 3-13, ② 3, 4, 6-12 short, rather  
 thick, all alike, forming a regular  
 ellipse from side view, ① 3-8, 13  
 and ② 3, 8 a little shorter than the  
 others, each with about 15 black  
 tipped spines from cone bases.  
 Green, a faint yellow s.d. line  
 3-13 parallel; a narrow broken  
 yellow d. line; s.d. dorsal spaces  
 as white dots and a large green  
 dot on 9 and. Horns con color but  
 ① 3-4 (also 4, 5, 7) light red. Skin  
 usually flat or concave granular

2.4 1/2 wide all pale green  
 2.5 1/2 wide pale green, a yellowish patch central  
 3.7 1/2 wide  
 4.1 cat  
 (Horn - band as a bridge joining ①)  
 the joining of the granular dots a fine pale  
 reticulum. Pairs pale dots for (1) and  
 (2) and slight hollow for (4), surface not  
 differentiated. Smallest one Aug 2, 2.7 mm

682 A 682 "Granula"? Like *S. pygmaea* II  
 Aug 3 1.4 1/2 wide except apical spine ③ not setiferous  
 " 4 " " 7-10 spines on a horn. s. s. depressed  
 " 5 " " 1.6 1/2 wide apical spine surface densely finely  
 " 6 1.6 1/2 wide granular, sep. measures rather  
 " 7 1.6 1/2 wide well marked. s. s. space not rounded  
 " 8 1.4 1/2 wide Head at 3, even. s.d. horns nearly erect.  
 D D D at 3, even. s.d. horns nearly erect.  
 Aug 13 1.8 1/2 wide Color greenish white, immature  
 " 14 " " Skin spotted shagreened, fine reticulation  
 " 15 2.2 cat to three covering the light " pale.  
 " 16 2.4 " 2.5 III Same as next but con color.  
 " 17 2.6 1/2 wide Horns subequal, s.d. a little longer than  
 " 21 2.8 1/2 wide lat. ① 13 narrow long, con condition  
 " 22 3.1 cat directed backward; lower apron of ①  
 " 23 3.3 " hollows subequal. Skin finely reticulated  
 " 24 3.5 " granular. Spines black tapered  
 " 25 3.9 " all pale green, a yellowish patch  
 " 26 4.2 1/2 wide central horn spine  
 " 30 4.4 1/2 wide Shagreened white, sep. measures marked  
 " 31 5.0 cat no marks. as above

This structure same as II, III, IV covered with  
 striae lines in these small reticulation  
 numerous but equal. Same as I to I  
 of same size but the reticulation are more  
 regular, distinctly round, not elongate. In  
 I, II, III they are elongate, somewhat  
 reniform and much more confined.



Small larva at Runkunkuma - like A II  
 Shed Aug 14 III - faint - horns @ 3-5. Aug 19 shed  
 color very faint sd. lines. Shed Aug 21 IV = 682 IV

682 III Another larva at Yafbank. Essentially same  
 Horns 3-5 and 13 distinct a little longer than  
 others, @ 12 also a little longer than 6-10 which  
 are alike. @ 3-4 little longer than 6-12.

@ 4, 5 bright red, @ 3 @ 3, 4 pale red; rest pale  
 obscure yellow line along sd. ridge, 3-12 joining  
 horns by a series of lunate dashes. A d. row  
 pale dots, largest on 11, 12. Segments with  
 marked in pale lines. Body green from  
 above, lighter ventrally. Whitish subdorsal  
 dots are larger on 11, 12. Spots even lat.  
 narrow, rounded at ends, 5-8 very small  
 horns some rounded and tapering much, short  
 well defined. Skin very fine - much clearer  
 than the previous stage. Horns in bottom of the  
 defined space of a segment.

682 IV Another Yafbank Aug 7. Eating whole leaf.  
 1st horn moderately broad even but a little an-  
 cune, not reaching but level and turning down at  
 the ends. Sides folded in above lat. line.  
 uncast stage 1 above. 5-8 space much  
 on trachea, the lateral horns touching the  
 leaf. Sd. horn small, curved. Horns short  
 except 13 which projects obliquely back  
 3-5 and 13 a little longer than the rest  
 which are all alike  $\frac{2}{3}$  as high as 3-5 or  
 $\frac{1}{2}$  of 13. Lat. horns distinctly longer than sd.  
 about  $\frac{1}{2}$  of 13 with several smaller upper  
 setiform spines, the sd. with only black

Shed Aug 24 (VIII) Shape as described except  
 that the 1st horn is

# 682 E

Horned in to genital. Horns as  
 fig 3, 4, 13 next degenerated.

Stage (I) on black oak at Yafbank

Shed Aug 10 (II) Like 682 A

Skin reticular

Shed Aug 16 (III) Like 682 III

Faint red in horns @ 3-5.

Aug 19 distinct Broken d.  
 line with dot on 9 like

682 IV.

Shed Aug 24 (IV) Like 682 B

[Horn clearly left out the  
 normal III]

Shed Sept 12 (V) Like 682 C

VI but d. marking faint.

Shed Sept 17 (VI)

Shed Sept 17 (VII) horns  
 short - last stage.

		Depth	Y.	P.
Aug 15	2.2	to shed		
" 19	3.5	cat		
" 20	3.9	"		
" 21	3.9	to shed		
" 22	"	"		
" 23	"	"		
" 24	3.9	shed		
" 25	4.1	cat		
" 26	4.4	"		
" 27	5.0	"		
" 28	5.6	"		
" 29	5.3	"		
" 30	6.0	to shed		
Sept 12	6.5	cat		
" 3	6.0	"		
" 4	7.0	"		
" 5	7.4	"		
" 6	8.0	"		
" 7	9.0	"		
" 8	8.7	to shed		
" 10	8.5	cat		
" 11	9.8	"		
" 12	10.5	"		
" 13	11.5	to shed		
" 14	12.0	"		
" 16	11.6	cat		
" 20	13.0	"		

Horn dull red, erected  
 1st horn with a faint greenish tinge  
 fading large on a leaf  
 24 horn 1 with black clear with  
 Cocoon elliptical, dark  
 brown without a veil  
 but a very fine weak with  
 threads, in ground on a  
 curled leaf. 9.5 x 7

in culture the horn had a line like the horn of 682



682C, VIII, (continued) reduced, ①3  
and ② 3, 4 small, short, ② 6-12 green  
broad, low, not as long as wide  
with and a few clubbed setiform  
spines on the lower outer side and  
some very short black spines  
above. Horn ① 6-12 red, a round  
cushion not as long as wide,  
bearing a tuft of banded or black  
tipped spines at apex directed  
obliquely outward. ①3 longer  
tapering, pinkish red. Body  
green, well pigmented, appearing  
reinforced in body bases and spaces  
down the sides surrounding horn ②

(1)(2)(3)(4) and the pattern of lines  
as before pale whitish, the 1st  
line narrow, concave and  
serriform with the pattern lines  
Skin nearly contiguous cone fine clear  
granular horn, deep space and all, the green  
pigment in the bases of the granules as  
in *E. indeterminate*, absent in the light marks  
which are gently colored by blood. Spines with  
shank black tip, shaft white of the narrow  
black banding done of the clubbed subcylindrical

② spine also banded. The small  
spines on bases of ② 6-12 above are just  
the same spine, grading to sixth  
tiny ones at upper edge of patch, black  
tipped with colorless shafts enclosed  
at base, nondetachable. Patch a single number  
edge at upper border. Horns 4-12 ① can be





# 682 E

Flomden à la forêt. Horns as  
fig 3, 4, 13, next degenerated.

Stage (I) on black oak at Yorkbrook

Date	Y.	P.	Shed	Aug 10 (II)	Like 682 A
Aug 15	2.2	total		Skin reticular.	
" 19	3.5	cut		Shed Aug 16 (III)	Like 682 III
" 20	3.9	"		Faint red in horns @ 3-5.	
" 21	3.9	total		Aug 19 distinct. Broken d.	
" 22	"	"		line with dot on 9 like	
" 23	"	"		682 IV.	
" 24	3.9	shed		Shed Aug 24 (IV)	Like 682 B
" 25	4.1	cut		[Horn clearly kept out the	
" 26	4.4	"		normal III]	
" 27	5.0	"		Shed Sept 12 (V)	Like 682 C
" 28	5.6	"		VI but d. marking faint.	
" 29	5.3	"		Shed Sept 18 (VI)	
" 30	6.0	total		Shed Sept 17 (VII)	horns
Sept 12	6.5	cut		shed - last stage.	
" 3	6.4	"			
" 4	7.0	"			
" 5	7.4	"			
" 6	8.0	"			
" 7	9.0	"			
" 8	8.7	total			
" 10	8.5	cut			
" 11	9.8	"			
" 12	10.5	"			
" 13	11.5	"			
" 14	12.0	total			
" 18	11.6	cut			
" 20	13.0	"			

Horn dark red, erected

Feet only a faint greyish blue  
paling. Stage not in leaf  
24 horn 1 inch with clear white  
Cocoon elliptical, dark  
brown without a veil  
but a very few weak white  
threads, in ground or a  
curled leaf. 9.5 x 7 mm



Small larvae at Runkunkunk - like A II  
but Aug 14 III - but not - brown 3-5 - Aug 19, one  
at base 8th line. Shed Aug 21 IV = 692 III


692 III Another larva at Runkunkunk. Essentially same  
Observe 3-5 and 13 distinctly a little larger than  
others. 12 also a little larger than 6-10 which  
are alike. 23-4 little larger than 6-12.


14, 5 bright red, 13, 23, 4 pale red; rest green  
Obscure yellow line along sd ridge, 3-12 joining  
laid by a series of lunate dashes. A d. an  
pale dot, largest on 11, 12. Segments well  
marked in pale lines. Body green from  
below, bright antennae. Whitish adducal  
dots and lower part. Space even lat.  
narrowly rounded at ends, 5-8 very small.  
Horn curve rounded not tapering much, short  
and thick. Skin very fine. Head clear  
granular like granule like those in bottom of the  
depression of 8th segment.

692 IV Another larva Aug 7. Entirely whole leaf.  
Moderate head even but a little an-  
cave, not arching but level and turning down at  
the ends. Side fold is above lat horn.  
Concave near 1 above. 5-8 sparse much  
on trachea, the lateral horns touching the  
leaf. 9th horn small, curved. Head short  
4-5 except 13 which projects obliquely back  
3-5 and 13 a little longer than the rest  
which are all alike  $\frac{2}{3}$  as high as 3-5 or  
 $\frac{1}{2}$  of 13. Lat. horn (distinctly longer than sd.  
and  $\frac{1}{2}$  of 13 with several small tipped  
setiform spines, the sd with only black

Shed Aug 24 (VIII) Shape as described except  
that the lateral horns are suddenly (unexp.)  
(1) not paired, join into a long slit, concave behind -

tipped spines. Clear leaf green. 13-5, 13 and  
23-4 red, 12 pale. Varn. yellow sd  
line 4-12, a granular d. yellow line, under  
not in incisions joining sep. lunate on-  
joined line the concave toward adducal.  
Sep. sp. the horn touching the paired dorsal

(1)  which are whitish dots. This  
is a small, rounded, slightly flattened shape with a central dot.

On the side the periform (4) and round (6)  
are whitish in a single large depressed area  
cutting off the part of the segment in a  
longitudinal bar. Round dot on 9 segment behind  
from the regular dorsal granular area. Head at  
low granular, prominent, the sides of the  
granule reddish, converging down to the  
adjoining ones. Horns granular. Space of red  
in 13-5, 23-4 blacker than the others. No callus  
shd Aug 14 dorsal, highest 4-5, nearly flat, sloping  
very little, sides rounded at very ends.  
5-8 very small. 23-4 in leaf. Bright green,  
translucent yellow line 14-13 joining a faint  
darker line between 5 and 4 in front. Enclosed a  
dimple pale wavy line 5-13 (4 large)   
cut around paired (1), nearly joining inside (2) white dots  
a tiny dot between paired (1) single. Between horn 3-4  
5-6 a line before first pair. On side white  
dots (4) (6) in large periform area  
with whitish edge line. Horn 3-5 larger than  
others, 13 long, all red tipped. 13-5, 23-4 bipartite  
13-12 red very faint. Spine black, white  
area rounded. Head 1 on 10 feet brown.  
Skin very fine, subconical pointed granular not  
shaped like a shield of horn. 9-10 horn above,  
no callus on horn but shining like horn 9-10




683 (see 755)

*Myophanta* Aug 2

Big J Apatela, possibly *Antea* or *Chamaelea*  
 but all light yellow and brown.  
 Hd. all suffused with dull purple staining.  
 The reticulate line enclosing the patches  
 of confluent pale dots, to 3.5. Body mostly  
 light yellow, green along a series yellow  
 but oblique patch around i-ii to 5-10, and  
 one on thorax & 11 and a reversed patch below  
 i-ii 12 as well as broken sd. str. line and  
 patches around the vent. predorsal. A  
 dorsal brown band, rich purplish sandy, a  
 spine in front of each i-ii patch and ventral  
 to a line between i contains a broken pale d.  
 line. The spine grows surrounds the yellow  
 dot of ii, <sup>breaking in yellow line</sup> Cth purple centrally, pink-red on  
 the edges around 3 tubercles; tubercles yellow.  
 Hairs white, smooth except vi, tubercle small.  
 Spinacles brown rudimentary. Very handsome.  
 Aug 5 all from h J. Yellow parts clay brown.

684

T. larvae on morning glory Bellport 2  
 Aug 12 1897. Whitest green, a narrow  
 narrow yellowish d. line, straight, fine  
 pin edges; a diffuse broad straight  
 brown white sd line. Side slightly  
 whitish, no markings. Vent. pale, base  
 white. No sd hair. Feet short. Hd. green  
 .6, .8 mm. 3d line reach narrow  
 A  very curved, with a white thick  
 along below it. Aug see on  
 close observation. (dead)





685

*T. pallida* (true) (I) little black on white oak  
 Spunk & 9 Aug. 9 1897. Length 1.1 mm. Tailed  
 (II) about Aug 12. Black on oak spaces, good granules.  
 Papillae and sharp tip. esp. on (2) but also on  
 D. B. Beaded slightly; setae a little alternating  
 short & long. Forally greenish. Two more Aug 13.

Passed Aug 14. Took out Aug 27. Larvates 3.1, 3.5, 3.6

Aug 27	3.1	cat	Same before, collater. behind, tail granulate.
" 28	3.7	"	Granules papillae on lateral ridge. Patch
" 29	3.9	shed	postapical over 4(1) and the below (4) 8.
" 31	3.8	shed	hardly yellow edged with gray on
Sept 1	3.9	cat	col ridge a little way post. (III) patch
Sept 1	3.1	shed	deep spaces indefinite, edge not too sharp.
Sept 2	6.1	cat	Sept 2 (II) Same post. Eating whole leaf
" 4	6.1	"	Flattened broadly elliptical dorsal space
" 5	6.1	"	granular, smooth, lat. sp. very broad & 8
" 6	6.8	shed	small, retracted. Chert grey in front
" 7	"	"	patch, more white behind. Patch (II)
" 9	5.8	shed	edged red & yellow, covering 6(1) still
" 10	6.0	cat	fully granulated to (2) 8. rounded
" 11	7.5	"	before. granular & central behind
" 12	7.8	"	with square central space, space
" 13	"	"	on yellow (II) webbing, black round & tail
" 14	"	"	on long red dot on 3. ant. Another at
" 15	8.4	"	Pine needles on beech. Same! red & have
" 16	7.8	shed	edge (II). yellow border covering 1/2 of lat. ridge.
" 17	"	"	Granules papillae, ridges 3 or 4 granules wide.
" 18	"	"	Another II. Sharp same flattened, longest ant.
" 19	"	"	3 granules. slight gran in front. gran
" 20	"	"	behind. patch large (as 17) granules fine &
" 21	"	"	narrow. yellow of patch narrow, to sharp
" 22	"	"	shed Sept 8 same but yellow of line more

686

Ported leaf  
 smelling

*Spatula* on poplar. J. style on wide side of  
 leaf sitting on brown punk which it  
 does not leave. Philadelphia Pa. Aug 25.  
 Hd 1.4 lobes, black with coarse white  
 hairs. Body opaque white, shaded with  
 ash-brown at sides and beneath s-v. 11-12  
 black shaded on 5th, 3-5, 7-9, 12, 14, leaving  
 white patches 6, 10-11, 13 in which I only a  
 little black. Hair coarse, straggling, white  
 shorter, black and subtended dorsally on  
 5, 7, 8, 9, 12. Vents small, dorsal haired  
 2 hair simple, mostly pale even on the dark  
 marks, uniformly distributed, rather coarse.



687

Gen? of *Chorodactylus* *sericeus*?Hd yellowish white, fine mottled  
yellow on 2 and each side.A black dot each side apex of s, center of s  
and mouth area, base of antenna black.  
Body robust, greenish white, immaculate  
with small rows i-vi & by plate, iv  
small but very distinct, all with  
light of long silky white hair.No black hair ant. Spinous white  
no black hair. In house on beech at  
Lake Umbagog, N.H. Sept 1, 1897.

Spun Sept 8.

Dead May 1898.



.35 .51 .72<sup>(2.1)</sup> 1.03 1.47<sup>(1.7)</sup> 2.11<sup>(0.5)</sup> 3.01<sup>(3.5)</sup> 4.3  $\frac{2}{10}$   
4 .6 .8 .95-1.1 -- 1.6 2.1 2.75 3.5

688

New Liparid on black oak, Southwestern  
N.H. Sept. 2 1897. Gregarious & spinning.Stage I. Hd. 4 in lobed and shiny black.  
Body dark & stout, pale yellow with vici-  
spicuous pale hairs. Seg. vicesimus dark, no  
mark.

Wants manual for  
Liparids is absent  
all same color with  
little brownish.  
only a

Stage II. Hd. 6, round, brown black. Body all pale  
yellow, a black thickened d. 5-8 when  
the hair are a triple dense, Retrailed  
tubercles 10, 11 whitish, and a smaller last  
circular gland between i and ii on 5-8.

Hair pale, dorsal ones stiff, pointed, spinulose  
sd 2 and 5-v longer, acromial feathers, a  
few from 5 dorsally subplumose.

(sh. hd. .50)  
Stage III. Gophawk L.P. Hds of larva black, white  
mouth is hard. Body pale ochre, hair short  
white & inconspicuous except a short black



pencil sd 2 consisting of 1 or 2 hairs and  
seen with lens; a short black tuft 5 &  
12 and trace also a 6; these hairs plumbed.  
Dorsal hairs spinulose, black tipped, 5-8  
and ant. ones long, restricted feathery.  
Ant. tufts 10, 11. Scars white than body.  
Hairs between i and ii (first before ii) reduced, only  
just visible in most favorable position.

Sept 17 Hd. 1 mm blackish. Body ochre yellow.  
A blackish d. and sd band (iii) broken and  
dotted showing the c-sh. just, narrow 7-11,  
broad 5-12; lat. covering 1st and 2, and  
showing iii wants and space between. Spotted  
short black pencil 2, and square black  
tufts 5, 6, 12 with some feathery white &  
black hairs 7, 8. Other hairs spinulose, pale  
longer 5-8, a few long black hair post. Red  
tubercles whitish. (All but one hypermarked  
by thin lines. I had one eating Sept 19)

Thi. 1st shed Sept 14 (Hd. .83) new hd 1.1 - and  
1st shed. Plumbed black pencil sd 2 and 13.

mixed with short plumbed white on 2 whole  
length. Black tufts short, brown 5-8, black  
12. Red. tub. whitish. (Doubtless mat. 2)

Black tufts 5, 6 and 12. Other hairs gray,  
more or less white minutely plumbed sd  
whole length mixed in the pale stuff  
spring bristles; soft long hairs 5-8. Body  
yellowish with black shaded lat. and  
d. bands, brown 5-12, also rest of body  
slightly streaked & spotted, appearance perfect  
with pale sd band. Red. tubercles whitish.

Hyb. Found June 13 1898 on bark Hd 1.8 =  
black. Body same but hair rather scant.  
Appearance when yellow black marked  
this June 20 Hd 2+ (Hd 1.6) as before; ochre yellow  
long pencils 2 & 13, tufts 5, 6, (black 7) & 12 and  
slight markings between bands black. Hair  
pale long or white sd minutely white 3-12  
Red. tub. white

Another at Longport June 20. Hd 2.7 black. Brown  
ochre, an orange black d. & lat. line, the  
lat. enclosing iii. Warts large, irregular, iv absent  
slang up on dorsal side. Black pencils 2  
& 13 long, slightly feathered at tip, ii hair black yellow  
& plumbed white short. iii all short & below & vi  
very white feathered. Black d. tufts short 5, 6 (slight  
7) 12. All same as in another one.  
2nd June 22 Hd 3.5 (Hd 2.75) Handsome good paying  
and other black d. & broken lat. line long  
black pencils 2 & 13 alike, not diffuse.  
5-8 hair long white, rest yellowish black.



689 = 105

Chrysomelid? on white oak. Morphology 2.9.  
(road to Longwood) Sept 14, 1897. <sup>III</sup> Hd 1.1 mm  
high angular bilobed (color best as to that)  
a pair of high tubercles on c-sh, but all the  
others perfectly flat, rarely slightly produced  
as i on 3, 4, i 12 rather large but flat.  
A curved horn on 5 and horns bending on  
12. Side of 2 feet 3-4 green and a green  
patch dorsally 11-13 behind the faint  
yellow V-mark of 11 and before anal plate,  
broken across by the brown hump of 12.  
Body brown, forming a dark d. s-r line  
on thorax, and a d. shading 8-10, punctate  
on 10 to enclose a rounded white spot  
(front segment of v); a white spot around  
apex of 11; dorsum 6-7 light, whitest,  
extending sd on 8; a faint pale lateral  
shade. A large pale patch on base of  
feet 7-10 around tubercle vi. Anal feet  
imp. Setae white slender heads as tips.

<sup>IV</sup> Shed Sept 15 - Hd 1.8 high, notched above, nearly  
white, the broad vertical bands joined by 3  
bars in front, above o, centrally and at vertex,  
leaving rounded areas of ground; an irregular  
line down posterior part of cheek, leaving a  
large lobed spot on side. Feet brown 5, brown  
12. Tubercles rather large, i a little produced  
but smooth, rounded; setae clubbed tipped.  
Color same; d. green 11-13 center of a brown  
line and divided in two by brown hump.  
Later green runs forward sd (front only)  
= parvipes typical color



690

Code from Australia

Mr. Olive, Recd. Sept 18, 1897

Length of horns (mostly broken off in coming)

Sd 3	8.5 mm, flexible	Lat 3	1.5 mm
" 4	retractile	" 4	6 mm curved forward
" 5	retractile		(3 mm up)
" 6	level, crater tip	" 6	3 mm tip flexed
" 7	.6 mm	" 7	3 "
" 8	.6 mm	" 8	3 "
" 9	.6 mm	" 9	3 "
" 10	.9 mm	" 10	3 "
" 11	1 mm	" 11	[3 mm?]
" 12	7.5 mm [pieces]	" 12	[3 mm?]
" 13	[3 mm?]		

Structure same as *Oratipora lewini* Scott

691-785

2 eggs laid on spider web on wax berry vine  
(*Chrysocoma racemosa*)  
over many dead leaves, "Rubber tree" Fla.

Jan 18, 1898. Elliptical, rounded, a little  
flattened above & below, scarcely shiny, pale creamy  
white turning yellow. Width  $\frac{1}{2}$  in. long with  
very obscure angular nets L. .75 or .6 in  
Hatched Jan 22 & looping like a silkworm. Sleek  
pale yellowish tawny-leopards 3 mm long with  
comparatively large head .4 mm wide, dark  
brown at the mouth. No spiracles. Distinct  
stunt, not long, dark, normal  
not glandular (vi absent)  
(not sure of viii or whether one of vii on the other side)  
(Jan 28 died)



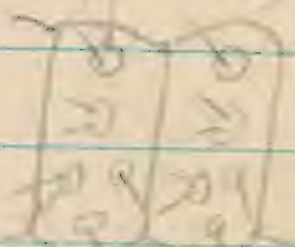
# *Lyptis anomala* Gu

692

Reared on morning glory, several off at  
Miami Fla. Jan 19 1898. Setae i-iii  
strong dark, at base, tubercles all  
anterior concavities, obscure. iv + v but  
only one strong seta, vii of three. Leg.  
slender, bulbous at tip, crochets  
broken in outside. Uniform green,  
shiny, nostr. thick, segs irregular  
2-annulate, well incised. Not very  
translucent tracheae faintly  
white, spinules a little yellowish  
Red 2 + green with brown base and  
black ocelli. A black dot on 3 and  
lat. Slightly bends up leaf and  
spins a web over, all on upper side  
Rest below web.

Jan 24 spun neatly  
between 2 leaves

making cuts to fit the pieces.  
Out Feb 12 1898 Cat. no. 14901



693 =

*Calyptrichia obscurus* in mangrove, Union  
Fla. Jan. 19 1898.

	no 1	no 2	no 3
Jan 20	12.5 mm cat	11.2 mm cat	13.5 mm cat
" 21	12.0 " "	13.0 " "	14.8 " "
" 22	[specimen]	(specimen)	15.8 " "
" 23			16.0 " "
" 24	Out Feb 14		16.7 " "
" 26	♀		16.8 mm - blue
" 27	out		[specimen]
Feb 14			Out Feb 24 ♀

no 1 is light blue green on sides egg blue  
water content with faint d. dots of  
shaded reddish for the mouth. 2 & 3  
are yellowish green on sides green with some  
red dots 4, 7, 11 d. Ant. brown not tipped  
all as in mat. Skin is d. green with  
min to spinifer granules, on brown with  
granules. Back tipped pointed hair, feathered  
hair and star hair, also slender black  
long in ant. lobe of basal piece or out-  
wardly opposite incision. Egg skin is mottled  
below a clear side largest larva (no 1)



Also caught 9 moths that eged in late  
 2.4. young in can. ① eged by Jan 20, 1911  
 Jan 21 AM ③ Jan 22 ⑤ Jan 23 ⑥ Ret in egg quite  
 waxes giving appearance of a fine putting  
 under lens; a narrow green smooth edge

Jan 24 ⑦ Hatched Jan 25. Whitish with faint  
 green tinge. 4 paired dorsal red-  
 brown dots. ① setae thick, alternate  
 1st & 4th longer, long, white; simple  
 paired 2d and 3rd brown double marks  
 in 4 pairs below ③ horns a dot  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺

Jan 25	1.1	cat	
" 26	1.4	"	
" 27	1.6	"	
" 28	1.5	hsh	
" 29	"	"	
" 30	2.0	cat	
" 31	2.4	"	
Feb 1	3.0	hsh	
" 2	3.1	hsh	
" 3	"	"	
" 4	3.2	cat	
" 5	3.6	"	
" 6	4.3	"	
" 7	4.5	hsh	
" 8	"	"	
" 9	4.8	cat	
" 10	5.8	"	
" 11	6.8	"	

later a small white shade along ① joining at ends.  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺  
 lateral level with the laterally extended  
 horns, side and sides. Horns 3-5, 8, 10, 12-13  
 short, tapering as far as width of dorsal  
 space of 7, 9, 11 very short cones less than half  
 as thick and about 1/2 as long as the others.  
 Long horns with many fine flexible spines  
 white hair. Sides and all the long  
 horns are equal. Color uniform translucent  
 whitish green. Side area covered by ①

but

mixed

horns, 1 at tip, above & at base with smooth  
 straight setae with dark tips. The short horn  
 has dense and have only stiff setae. Skin of  
 body with clean setiferous granules. Horns  
 ① constructed & thick at base but without  
 separate basal pieces. Eats a large green  
 the inside of the body, sitting in it the horns  
 overlapping on the leaf. In some, under horn  
 set on 4, 7, 9 & 11 or (4, 7 & 11 d. or none.

Shape essentially as in root. The dorsal  
 piece broad and shallow. Horns 3-13 of even  
 length except 7, 9, 11 which are about half as  
 long as a whole are half as long as the others,  
 thick tapering, constructed near base, the rounded  
 basal piece indicated but not furcate.  
 Hairs abundant, fine spiracles & before with  
 some smooth skin tipped over. Horns 13  
 1 horns. Primaries setae 11 visible. Color all  
 green, whitish & brown. Skin as before  
 horns slender than before and look more  
 numerous as things of the weak age, appearance

Feb 12	7.0	to horn	
" 13	"	"	
" 14	7.7	cat	
" 15	7.3	"	
" 16	10.2	"	
" 17	10.5	"	
" 18	10.4	hsh	
" 19	"	"	
" 20	"	"	
" 21	11.0	shed	
" 22	11.0	cat	
" 23	12.0	"	
" 24	13.0	"	
" 25	14.0	"	
" 26	14.5	slightly	
" 27	15.0	cat	

Feb 13 Same in general. Horns  
 1, 7 & 11 not just a little shorter  
 than the others about 1/2, just per-  
 ceptible. All green, purple with  
 thin white hair. All the horns on  
 the horns and the white feathers are  
 except a few which are smooth  
 & black-tipped. But they are not  
 noticeable. 1st rounded green with  
 black eye & brown smooth w. &  
 3, 4 & 5 & 6 & 7 & 8. A little like  
 the horns are all same length



On ③ Prime false mangrove = Chrysobalanus  
icaco (cocoa plum)

Ardisia pickeringii (F. King)

Occurs also on "thick leaf red stem" and  
cocoas & leaves on Hippelate fasciculata (det 1909)

Jan 21 '98, road to Coconut Grove.

Small 4.5 cut. Elongate elliptical, rather flattened  
" 2.5 4.11 with next ridged. Charn 3-13 long  
" 3 3.7 " slender, extends laterally all  
" 2.8 3.2 " cell-like, 2-4 dentate, <sup>marked green punctate</sup>  
" 2.9 4.0 " obs. punctate at base & groove  
" 2.6 4.5 " broad, not deep. 8-10 again  
" 2.7 4.7 " helping & flattened. Min 8. 1 cut with fine  
" 2.8 " " dense scabrous sparse punctate, brownish  
" 2.9 " " smooth covered with long white fine  
feather hairs with granule bases, rather  
1 on base, 11 on top smooth, dusky. ③  
horns numerous, rounded, tapering with  
enlarged base but constricted at all  
green, no markings & no other hairs.  
Horns come off just as in mat. [died]

Feb 11 half blue green, horns light green, clear & refractive  
at base.

Feb 13 (cutting whole leaf) shape of mat., all horns  
equal. 3 or 4 black short & slightly recurved  
D. groove distinct, narrow; basal fine dentate.  
beet shaped at base. Horns regularly tapering,  
rounded at tip, densely clothed with long fine  
white fringe hairs. There are also some short  
smooth dark tufted setae and short  
densely feathered star-like hairs especially in  
round base of horns. Setae; and 11 distinct long  
smooth black. Skin so mat. Color all  
dark soft green more whitish along groove.  
neatly cut leaf but the red spots in this stage

Shed Feb 21 VI. Shape as in mat. Fringe  
white hairs are dense along sides of ①  
horns, on top mostly replaced by the short  
or star-shaped ones. The smooth black  
tufted hairs are numerous short and are  
not noticeable except on base of 3 horn.  
Horns 3 or 4 a little shorter, esp. that of 3.  
All green, whitish fine hairs. Top of horns  
have a slight orange tint. All like  
mat. except horn 3 not so short or curved  
and red marks absent. The short smooth  
setae are the remains of the original long  
ones & the star-like hairs are the feathered  
ones of dorsal aspect of horn made short.

Feb 28	15.5 mm	cut	mean 4	14.7 cut
man 1	15	"	" 5	shrink & make white dust
" 2	"	"	Spun in the P.M.	
" 3	16	"		

Cellulose (6.7%) 10.2, 10.3, 10, 10, 10.4. [One just  
shed 8.8 mm, like last stage] Probably one more &

One 13.5 to shed - like last stage  
Horns partly regenerate when broken off  
before last stage



Calc .40 .67 1.11 1.85 3.08  $\frac{6}{10}$   
 Found 4 .7 1.2 1.8 3.

694 =

Eggs larvae of *Pieris monuste* on poplar leaves  
 Miami Fla Jan 23, 1898.

Egg. Fusiform, rather thick, 1.1 x .6 mm  
 10 x 11 ribbed, finely transversely wrinkled,  
 scarcely striate. Apex small, truncate.

Stage I Hd. 4 pale yellow, shiny. Body yellowish  
 with distinct dusky tubercles and stiff  
 blackish setae which are sticky and

grain of sand adhere to  
 them. Body uniform, thick.

12 a little larger. Feet short.  
 Hds 4 (ish) same but tubercle i and iii are  
 conspicuously black, the body is greenish  
 with faint yellow sd and stig stripes.

Hair sticky as at first, faintly blackish.  
 Hd 7 mm rounded, orange yellow, the corners white  
 setae from distinct tubercles, dusky. A dark  
 line on the neck at the sides. Body cylindrical  
 green with faint yellow sd & stig line.  
 Feet less green. Tubercles i, iii, & large &

black and many small 2<sup>d</sup> being all  
 from blackish tubercles. Csh divided  
 black. Hair all pale with slightly  
 enlarged tips. Legs about 4-annulate, a  
 large annulet carrying i. Yellow line very  
 divided of the black dots. Feet short.

Hd 1.8 mm Hd greenish yellow, shaded with  
 orange behind & more deeply each side of  
 tubercles 1<sup>st</sup> & 2<sup>d</sup> black conic, with white &  
 black hair of various lengths. Body thick  
 & cylindrical legs 6-annulate. 1 annulet large  
 green, head dotted with black tubercles  
 i and iii still conspicuously large. Dorsal  
 green with faint yellowish d. line; sd  
 and stig line more distinct, orange yellow.  
 The space between blue gray. Hair 1<sup>st</sup> & 2<sup>d</sup>  
 of various lengths, some long, some short, mixed  
 black d. and white lat, 1<sup>st</sup> almost entirely  
 obscured. Feet short, normal. Tubercles of  
 conical shield high conic. 13 square behind.  
 Hd 1.2 mm Green a little orange, shaded



with black tubercles, 1<sup>st</sup> & 2<sup>nd</sup> and white  
setae. Body green, the space between yellow  
red & black lines a little darker. Many  
1<sup>st</sup> & 2<sup>nd</sup> black tubercles i & iii large &  
with central points, those on c-d  
conic, all black. Setae short, black  
& white, glandular with drops of moisture  
not swollen at tip. Legs obscure 5-segmented  
thickened. Hd 3 yellow green, 4 bluish, orange  
cast side and on neck at sides. Tubercles  
all black and also some fine black dots.  
Setae white, i esp long. Body bluish green,  
with white black tubercles, i & iii large,  
those on c-d conic. d line narrow, red  
& slightly broader yellow the last 2 orange  
tinged; front yellow green just about  
them; last region grayish between red &  
sky line, 8<sup>th</sup> region yellowish, feet pale.  
Anal pl. forked, consisting of 2 conic  
low projections. Setae stiff, black &  
white sv. some of the 2<sup>nd</sup> very small


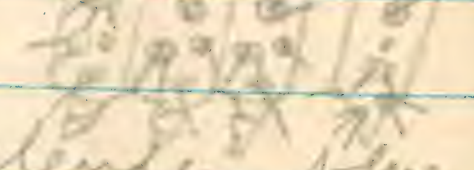
like pale. All the largest tubercles  
are conical or have central cones.  
Jan 30 Bupa Jan 31. With first and cross-  
axial tufts. A high dorsal keel on the  
mesothorax and smaller one on abdomen,  
a small projection between eyes and  
a pointed one above base of antenna case  
a slender thorn-like appendage red on  
3<sup>rd</sup> abd. seg. next to wing case. Creamy  
white, d. carina and a red line  
faintly orange tinted; a broader black  
patch on 1<sup>st</sup> & 2<sup>nd</sup> prothorax, another on  
posterior half of mesothorax, a broad band  
along int. edge of wing and running in a  
submarginal band round to apex.  
Beside this there are a number of  
scattered black dots largest d. post. on  
2<sup>nd</sup> seg. and in a sv stripe. Length 25 mm  
Ant 7/11/1958 Cat no 14900  
Same locality from Mr Krugel, Palm Beach  
Fla May 5 1960. A *Capparis cynophthal-*  
*mus*!




Calc 4 .61 .93 1.4 2.15 rat.66

Found 3 .6 .9 1.4 1.7 2.15 " 87  
nw 9 1899

695 *Thevetia nerifolia*

Micro on narrow leaved milky bush (most)  
in cemetery Key West Fla. Jan. 26, 1898  
Web up a group of leaves in a tube and  
punch them out. Spin in similar tube.  
Solitary. Subtranslucent pale blue,  
shiny, a broad deep orange stripe  
between ii & iii about on 2, broken  
into spots on 3 & 4. Tubercles very  
large, shiny, black.   
Normal for Pyralidae.   
The feet black, abd. slender blue  
hd. pale brown shiny with 12 setae  
7.6 mm. <sup>9th hd seg. 2.15</sup> hd 2.1 orange tinted. Same.

Hd 3 pygmaea, slight web a black leaf. Hd  
very pale brown. Body translucent green,  
foot green, with dusky watery i-v present,  
no vi (vii not seen) by orange. A faint  
trace of orange sd line.  No subprimaries.  
\* (10th hd 1.8) Shed Jan 28 Hds .6 (clear wa. 5)  
pale brown Body transparent green

fine food with large black tubercles  
supper. present. Slender, shiny, broad  
line webbed a trace of the broad  
sd. orange round not as a marking  
but seen with lens near extremities  
later many sd lines distinct but broken.  
Shed Jan 31 Hd .9 Like mature, pale blue  
but look dirty green from the food. (Shed 9)  
Shed Feb 4 Hd 1.4 Same [but not] at Nassau

Imago Feb 6 1898 Cat. No. 14896 ✓

*Margarinodes flegia* Cr  
v. Hps. *Pr. Zeller* 1898 p 732

First genus *Parotis* Hbn. *Gen. Sch.*  
III 30 1125 ✓



Calc. .5 .82 1.34 2.2 3.6 rat. 61  
 Force .55-1. 1.4 2.2 3.6

696

July 2, 1898

*Pamphila cithlins*? on *Canna* at grounds  
 Hotel Royal Palm, Miami, Fla. June 28 '98  
 from Mr. Slosson & Dr. Prime

Eggs scattered on either side of the leaf  
 singly. Almost perfectly hemispherical  
 like *Notodontina*. White, opaque not  
 shiny with a most tender tint of green  
 which disappears later giving place to  
 reddish. All minutely densely white  
 granular as in *Notodontina*; micropyle puncti-  
 form, depressed. Diam. 1 mm, height .6 mm.  
 Hd 1 mm in length folded back. Hd subconic,  
 tapering above with small ventral notch  
 $\Delta \frac{1}{2}$  to vertex with side piece, smooth,  
 dark brown, the color reticulate the dots  
 very pale translucent. 2 small, a narrow  
 black transverse cth. Body undoubtedly thick  
 a little flattened behind, tapering before  
 to 2, 8 glands - 7, a 8x ridge. Eggs with  
 fine annulate feet, all very rounded.

June 5 July 4 1898 Cat. no 14892

thinned dark pitae, no cth but a sd  
 joined dark seta. Transparent, no color  
 find dark green, tracheae whitish distinct  
 the ramifications plainly showing  
 The feet small, black, venter all concolorous  
 Hd 2.2, base 30 mm in size. Hd very small  
 high, narrowing, slightly notched, pitae  
 Dull, lustrous brown, rather shiny, smooth  
 Body thick, tapering before & more suddenly  
 behind, 7-8 annulate, annulus 1 very large  
 slightly shiny, minute black pitae  
 the pile of on black black tubercles.  
 Cth narrow, transparent black. Prespinal  
 tubercle black, a whitish spot below it.  
 Tho. feet small, black. <sup>anpl</sup> thickened into  
 a low pad, not pigmented. Body per-  
 fectly transparent / stomach written  
 dark green, edges of d. vessel, gland  
 and tracheae yellowish white, the spiracle  
 or 12 with dense radiating tracheae. 8x  
 ridge & feet a little whitish, but no



fat granules or any pigment. Looks  
blackish green but wholly from food & blood.  
Hd 3.6 (Hd as seen 3.6) rounded D, notched  
at vertex, small; caramel tinted white,  
brownish at apex, a Δ black spot in apex  
of clypeus, rounded spot on ocelli & jaws  
black, not shiny, a little oblong green,  
pale obsolete. Body very large &  
thick 50 mm long, flattened at large  
concolorous plates, tapering before to 2.  
ish obsolete except a black dot at  
each side. Spinacles large, white, esp.  
the one on 2. The feet of 2 black, the  
others white. Legs annulate behind,  
pale small & obsolete. Tubercles  
whitish. Very transparent, blood watery,  
food in stomach looks green. Stomach  
dorsal, tracheae both on skin and  
stomach, sex glands etc all plainly  
visible. A diffuse white s-d stripe  
of pigment on skin, s-v fold narrow

whitish. a snowy mealy patch on  
each side of vertex of 11 & 12. Spinacles  
of 12 a little higher up, with short dense  
radiating tracheae. 9 glands on 10 an  
oblique stringy line. Edg. of 13 pale, pale  
folds over part of leaf or 2 with subcut.  
Pupa slender cylindrical a little thick  
est through mesothorax, last 2 seg. taper-  
ing. Eyes large, prominent, a long thick  
horn arising between them, recurved  
a little at tip. Cases reaching 3rd abd.,  
a long slender tongue case reaching  
back 21 mm or 5 mm beyond the end  
of the cremaster. Legs of <sup>days 8-10</sup> 4-6 abd segs  
represented by little patches of cornuous  
scales. 3 movable vincula. Cremaster  
long, hollowed below at base with  
many terminal hooks. Pale green with  
white bloom, a curved blackish bar  
between the eyes, horn dark red, a  
set of black dots on abdomen in the



71

Hol. 53 - by 2 cuts in edge of leaf  $T \rightarrow T$  on back.  
 Hd rounded conic, black brown, shiny, not notched.  
 2 rather small, narrow black cth; all else whitish  
 translucent. Eyes firm food, spinous of 12 large  
 1 conspicuous whitish; dull not shiny setae not  
 seen with lens. Larva even with  $\frac{1}{2}$  in stage.

697-785 *Pisomia*

Looper on small bush at Palm Beach also on  
thorny (red-leaf) vine <sup>(5)</sup> Key West, Fla Jan 1898  
Slender, smooth, feet normal; hd. 2n  
round, pale gray with dark gray mottled  
spots. Body mottled with light and  
dark gray with a tinge of reddish  
like bark, pale on front half of segs.  
and a dorsal A mark on back part  
the center d. shading into black, most  
strongly on 8 & 9; black mottling also  
a ss ridge on 8 & 9 post and living  
the post of 10 before & behind. There  
are also small dots & mottling of  
black all over. Rather uniform, not  
conspicuously marked. 2n lines.  
went down for 31



698

*Eupholia salicifolia*  
(Hempel)

*Eugenia* species webbing up and feeding  
leaves of a bush in fine sand (6) W.P. 92  
Bahamas, Feb 1 1898. In center of web  
a firm, <sup>curved</sup> tube of silk and grass. Pupae there  
Slender, abd. segs rather elongate,  
ii & v approximate anterior, not  
joined, vi just, iii in line, (Tineid)  
Hd 1.5 very pale, clypeus brown dotted  
Body with many longitudinal fine  
brown lines, 6 on each side of varying  
distances. dorsal dark, narrow, a  
broad dark shade of 3<sup>d</sup> & 4<sup>th</sup> line below  
tubercles i and iii. Lateral region below  
this paler. Setae long, fine dusky.  
Csh very large but colorless. Dorsum  
has a fine brown tint. Retreats into  
silk tube emerging in the web to feed.  
[Hd 1.0 same] At inst (1.5) turns all dirty  
green, dorsum brownish the 3<sup>d</sup> dark shade  
showing but lines all obscured.

Jan 28 1898 at W. 14891

Observation. The larva runs circular areas and  
attaches the detached pieces to the case, leaving holes  
in the leaf. Bore the last time.  
Not other regular young case (but not  
at Miami) 699

Egg on mangrove Nassau N.P. 3 miles west  
of the town near the sea. Solitary on back  
of leaf, perhaps code. Rounded elliptical  
rather too thick and visible. Pale  
yellow centrally with clear rim and  
embryo showing. 1.2 x 1.0 x .15 mm.  
Faint linear reticulate, angular and  
irregular, also fine crinkled shaped  
between the nets. Found Feb 2, 1898.

Hatched Feb 6 a little active slender Tineid.  
Hd blackish brown, oral with distinct light Δ,  
shiny; w. 2.5 mm Body shiny pale brown,  
immaculate, not very transparent. Setae  
fine & obscure but fairly long. Pale with  
enlarged tips, ii well below i, ii & v approximate  
& small, subprimaries doubtless absent. Anal pl.  
colorless, csh dark with irregular edge  
at a back of leaf, mining, a webbed up mass of  
grass at the opening.  
Inst case on mangrove, a flexible web tube 6 mm long  
with fine brown grass within and several circular pieces of  
dried leaf attached to its edge [7 pieces] at various points of the  
tube the whole attached at one end to the center of a  
circular crinkled surface on back of leaf like a disk.



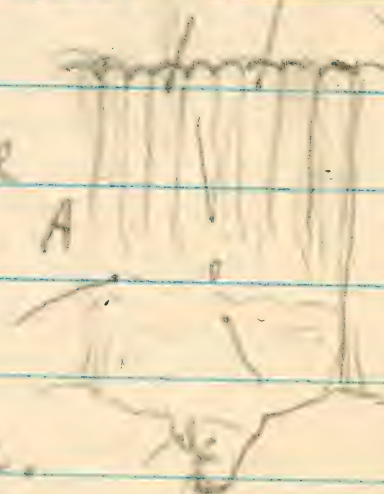
700

Miami, Fla

Egg by *Chironomus terra*? (Cat. no. 14881)

Jan 30 1898. Elliptical, flattened a little  
above & below,  $1.5 \times 1.4 \times 1.2$  mm. Pale green,  
smooth, slightly shining. Under  $\frac{1}{2}$  in oblique  
downy reticulate, shining in the bright light  
as pale, rather broad lines in nearly square  
meshes; the surface also finely shagreened.

Hatched Feb 5. Larva, pale greenish yellow  
3.7 mm long with a small erect long, thick  
black horn 2.6 mm, rounded apically, cleft  
at tip. A reddish shade at base of horn before  
and behind. Hd. round, even with 2 not shiny  
concolorous setae slender, ~~erect~~  
bent, simple, not at all  
glandular, no 2<sup>d</sup> present. A  
legs fine, not very distinctly  
8-annulate, a slight s-s ridge.

700  $\frac{1}{2}$  = 682

(Jul 4 1898)

Egg by *q. nasoni* June 29 P.M. 1898  
Elliptical, flat, very large, shining above,  
translucent whitish. Reticulation  
distinct, large, irregular, quad-  
angularly reticulate.  $2 \times 1.6 \times .1$  mm  
Hatched Jul 10. Larva kept at Belfast  
where it was cool not till Jul 14.



701

Popalid living in stems of thick sea bean  
on beach Nassau, N.P. Feb 6 1898.

Hd 1.4 fairly round & pale brown mottled  
with darker brown on each lobe turned 11.  
Body dull green, rather opaque, tinged  
with pink dorsally. S-s fold a little  
whitish. Setae fine, rather long and  
obscure from small concolorous tubercles.  
iv & v distinct, approximate, & very sens.  
Csh large, concolorous. Legs with an  
indistinct annulet and a little pink-  
ered. I traced 17 plants north.

Bones down in pit with a long tube opening  
at leaf bud with a band of fringes  
slightly webbed up. Rarely a leaf stem

West hem Feb 9. Another Hd 5 black on lobes, 11 pale  
Csh translucent, dusky blackish, large. S-s all  
green, thick, the incision shining, translucent  
uniform. Shd Feb 11 Hd 7.5 same

Ant March 8, 1898 Cat. no. 14923

702

Jan 25  
1900

Egg laid by ♀ limas (cat no  
4894) in a patch not touching each other.  
Nassau N.P. Bahamas, Feb 6 1898.

Spheroidal, circular from ventral aspect.  
D. 8, height .7 mm. with about 28 ribs  
rounded, not very sharp, yet quite distinct  
and regular, running nearly to vertex; each  
rib is the width of 2 reticulations which are  
uniform, faintly distinct & quadrangular, a  
nearly straight line running along apex and  
bottom of each ridge of the same distinctness  
as the cross lines. Uniform light yellow.  
Hatched Feb 13 (Alcohol N.S.N. M.)



Subprimary tubercles not seen

Cat nos 14928-9

703

from rather large  
dark tubercles

Leaf miner on "wild Cappadocia" Nassau N.P.  
Feb 8, 1898. Minus under the upper epidermis  
which is simply split off as a thin film.  
No larva eating into the parenchyma below it,  
leaving all the veins. First a tortuous mine  
linear, white with a brown central line,  
growing from .6 at egg puncture to 1.2 mm.  
Then suddenly a large blotch 6 x 15 mm.  
often partly covering the first burrow, first  
split off, finally all pinked below.  
Mine contains loose frass.

Hd .25 mm much narrower than 2, dusky, the jaw  
and 4 indented line a water dark. Body  
flattened incision distinct eyes rounded and non-  
uniform, 2 large with large dark cor. and a  
dark dorsal area also on 3. The feet short,  
but thick and projecting far laterally.  
Abd. feet small on 7-9 more seen on 10, anal  
seg. subse. like but with feet. Setae rather  
long, but fine and obscure, pale, iiii done in a D.  
10 & v in line, remote & apparently a little higher  
than iv, at a bordered area on all the segs.  
which are a little higher than abd. but 4 is at  
concolorous, 3 darkened behind.

Setiodes bahamensis Dyar

704

45/99 nsp

Little Pygmaeids on a bean-like Anulopsis  
Nassau N.P. Feb. 11 1898. Flattened as usual  
thick & rather square, feet normal, 5  
wants a thorax, 4 on abd, low, simply tuft  
of short dark hairs with 3 or 4 long pale  
ones at the interstices. Centrally blue-  
white, a dorsal 2 s-d (one above & one below  
iii) and a s-v (below iv+v) straight, narrow,  
purple-brown lines connected ant. by a  
transverse line on 5; ends light red,  
i.e. 2-4, 12-13, a conspicuous pale yellow  
spot behind i+ii of 12 like a pair of  
eyes, 13 and also 2+4 rather broken up  
by pale spots but not much contrasting.  
Hd in the head about 1 mm or a little over  
skin clean glabrous; hairs smooth, pointed  
not bellous. L 8 mm Feb 14 spin the  
characteristic white web of flocculent silk  
Oct June 8, 1898. Cat. no. 15032



705

Egg of *Heteropneustes cruciata* from cocoon  
from Ständerger. Collected April 10 1898  
(freed by heat of steamer?) eggs April 11  
Elongate elliptical, rather narrow and  
somewhat thick, whitish translucent  
in glass. shiny like water drop on leaf  
5 x .7 mm Ret. linear, gradually  
very obscure, in light light as dark line  
all ind. Got another lot April 19 '98



706

Leaf miner in the needle Pine,  
Rosslyn Va. April 17 1898. Saw nest of  
mine sitting into a new needle.  
Head and large etc black. Body  
all dark brown, just 13 pale. Segs  
with transverse <sup>double</sup> crease behind middle  
feet rounded, distinct. Setae very fine  
pale whitish, short.



from rounded <sup>conspicuous</sup> tr.  
elevated concolorous tr.  
beak. Cannot see vi  
or even for it. but 2 or 3 setae also  
base of leg. Legs short, nothing to  
be seen on them. Spinules not  
seen, but probably above the appen-  
dixes IV-V.

Fun 2.2 2.6 3.4 4.2

707

3 elegant Parangia from Wm. Henson  
Jacksonville Fla. April 19 1898  
Sh. 2.2 2.6  
Hds 2.1, 2.1, 2.5 ± On Cephalanthus  
etc, etc rose. Lycopodium, black  
pencil on 2 & 13, many black side  
plumes, brown tufts on 5 6 7 and 12  
all alike. Exserted part of red. tent.  
white, & reddish dorsal ring.

few black, body dark gray, mottled a  
little with white esp. tent. Bush  
tuft thick compact, same as 8. a  
sd row of white plumed short hairs <sup>5-7-4</sup>  
8-11, the dorsal hair spring, black  
space. Hair of iii black stiff + a few  
plumed white + the few black dorsal  
hair. V & vi bear long dense feathered <sup>3-sided</sup>  
white hair in a 2 x fringe, v also  
a few plumed black ones.

Thurs Apr 23 Same, tufts all brown,  
pencil black, 2 & 13, many side



Plummes: sd row of white short  
plumes; tubercles pale, oblong dorsal  
new heads 3.9 and 2.5 ± Late tufts  
more black, not quite as dark as  
pencil, more smoky, otherwise same  
etc. shed April 25. Hd. 4 (sh hd 2.3)  
Plum. black, tufts all alike smoky  
black. Lateral hair white, ven  
thorax scattered full of single black  
plummed hairs.

Red May 8 (Hd 3.4) new head 4 ±  
Same. [all died - sick]




Moth came out curvimacla!

Dr. Thaxter has briefly described the mature larva.

708

Oct 14 '98

Egg of Calocampa superba through Dr. Ottolengui. Hemispherical  rounded, strongly vertically ribbed, beaded, with ring-like microsculpt. Ribs about 40, close diminishing with calcareous fine beaded. D. 8 H. 5

Hatched May 7 Head rounded, pale brown, not shiny w. 4 Body slender, obovate looking, abd fat of 7-8 much smaller than other esp 7. 12 a little enlarged. Roof smooth light green, feet visible; tubercle large <sup>near</sup> circular 1-8, ix equidistant iii-v, setae dark.

distinct but short. Cth brown, an anal plate. Cth elong & turned pale greenish. Feet green.

Shed May 11 Long slender, 7-8 feet very small. Hd. 6 pale greenish unspotted. Roof not shiny, reddish green with narrow white d. sd <sup>small</sup> anal stig. lines, none very distinct. Tubercle minute, setae distinct dark brownish.

is behind lower edge of spiracle (as well as ca. 100) Ocelli black. App very distinct annulate

Eat out at night in last stage

One down June 7 (by black box)

Shed in August Coll no. 15156

Shed May 16 Hd 1.0 (slight green not shiny) ocelli black, mouth faint brown. Roof green d. line straight white, crumpled edged, i-ii white, sd line straight narrow white; iii-v less distinct white, sd line distinct white moderate broad, somewhat shaded below, feet green it at lower edge of spiracle.

Feet of 7-8 smaller than 9-10. Feet covering spiracles.

Shed May 19 Hd 1.8 all pale green, 12 a little enlarged. Feet nearly equal.

Long <sup>distichous</sup> white d. sd narrow <sup>rather</sup> punctate stig. moderate enclosing spiracles except on 2 and 12. a dark green shade above it reaches to iii. Feet green, shield of plate uncorrupted obscure tubercle minute black, in white ring, ix at lower edge of spiracle, setae rather long, pale dusky. Spiracle white finely black marked. No marks on head.

Shed May 22 Hd 2.7 <sup>labial</sup> green, ocelli scarcely black centrally, <sup>white</sup> green plates invisible, faint white dotted & line white; d



since 4th much more than body, retracted all over, horn shaded in a line of antennae. Body very pale opaque, still marked the same. Setae simple, only 3 of VII in all. young very good eggs; VII present

distinct, double at ends, evenly edged, sd narrow faint,  $\frac{1}{2}$  as wide as d, stg narrow about width of spiracles which is half length except a 2 x 12, containing it which is opposite lower edge of spiracle, a dark green shade above the line, diffuse, faint at spiracles. Sx white dots, feet clean green, equal. Sclerites 12 slightly enlarged. Tubercles white. Spiracles white, black ringed.

Shed May 26 Hds 4.6 pale brown, shiny, faint striations with darker brown across the apex of the lobes, no bands. Tubercles whitish, oval. Pale, the upper ones narrow black centers. Body light yellow-brown, d. & sd line narrow. pubescent darker brown with white broken with darker line, oblique sd shade brown, narrow passing between the whitest is  $11^{th}$  skin mottled dotted with whitish. Sclerites moderately broad whitish on edges, centers of color of body defined a brown shade above it, a very narrow cutting spiracles (1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th). IV-VI which II tubercles have edge of spiracle. Feet pale. Setae white c-shape and plate not compressed not lined. Spiracles white, black ringed. Feet equal. 12 a little enlarged on top. Body color drab. \* May 27 fed with a pale greenish whitey brown. \* marks same but quite faint. Fall off easily. Fall got like this!

July 14 11.8 mm just hatching a trace of gray  
" 15 12.5 cat  
" 16 11.6 " only a little grayish whitened  
" 17 11.5 to J whitish somewhat but translucent and J

709

Egg of *Aphoda avellana* from 9 ex cocoons from Standinger May 14 1898. Elliptical. Flat, as usual, clear translucent whitish with transparent rim.  $1.1 \times .8$  retraction obscure. Embryos a less than 24 hours.

Hatched May 25 Head slightly testaceous, eye

May 25	1 mm	walk	black mouth brown c-sh
May 28	1.4	"	cat
" 29	1.5	"	blackish brown covering head
" 30	"	"	when latter is retracted.
" 31	"	"	"
June 1	1.7	"	cat
" 2	2.2	"	"
" 3	2.4	"	"
" 4	2.4	"	"
" 5	2.2	"	shed
" 6	"	"	"
" 7	2.2	"	shed
" 8	3.0	"	cat
" 10	3.2	"	shed
" 11	"	"	"
" 12	3.3	"	cat
" 13	3.7	"	"
" 14	4.5	"	"
" 15	4.5	"	"
" 16	"	"	shed
" 17	"	"	"
" 18	"	"	"
" 19	"	"	shed
" 20	5.0	"	cat
" 21	5.5	"	"
" 22	6.0	"	"
" 23	6.5	"	"
" 24	6.3	"	"
" 25	"	"	shed
" 26	"	"	"
" 27	6.4	"	shed cat
" 28	6.8	"	cat
" 29	7.0	"	"
" 30	7.5	"	"

Body dark brownish before. Grained & rounded. Head, d. & lat. space moderate, flat. Sx tubercles, tubercles large round, forming a d. & lat. ridge. White (d) also as but less. Antennae, short, whitish, after feeding pale green from food, smooth boring. Setae as in *Aphodius* (d. & lat. space) the branch of D 12 short. Pale with dusky tips. A actor below. For 2 st of 13. Spaces a little hollowed whitish, d. & lat. Hd-c-sh prominent less than in *Aphodius* and the branch of Y-spiracles short. Like *Y-increase*



281	8.2	cat	287	9.2
"	7.1	"	"	9.3
"	8.5	thick	"	10.0
"	"	"	"	10.8
"	"	"	"	11.4
"	"	"	"	11.8
"	8.7	3500	"	12.2

Standard center of (12) is not a dot but a short straight slit. Central dots faint or other beside (1) and (6). No whitening at first

March 31 Elliptical, tubercles narrow behind and widest through 4-5. 1 lat. space broad. narrow at ends. 5-12 small retracted. Ridges prominent with rounded tubercles, 2 large black topped spines (1) one on (2) 5-12 (5 on 3rd) normal skin fine granular with pale scales, spines on the tubercles. Pale green, (1) ridge whitish a black shade under 2 showing from cth pigment under the skin. Still some alternation in (1) pairs of 5, 7, 9 still leaving out a little.

Figure 7 Elliptical rounded before, tail slightly granular, tubercles ridge prominent. Still a little exceeding 5-12, 1 lat. space broad, 5-12 small retracted. Depressed spaces (1)-(6) all distinct, whitish, (2) somewhat oblique, (18) indicated as a large smooth hollow. Tubercles moderate large, (2) largest, forming the arched and bearing long stiff setae. Setae black at top. (3) brown fine white 5-13. Skin fine granular with 2' spine on the tubercle or elsewhere except a few at the extremities 3 & 13. Color green, not pigmented but well colored, a whitish line (1) 3-13 slightly broken 3 transverse and the depressed spaces (1)-(6) whitish.

Under the Zeiss A2 the granules are on latitudinal ridges spaced out on (1) tubercles, (2) tubercles bear papillae granules with enlarged distal tips. These are rather short, never pointed like 2' spines and are large at the extremities 3 & 13. a very few also on (1) tubercle as <sup>small</sup> tubercles (3) line becomes distinct no trans line on 3

Figure 11 Tubercles somewhat less prominent but still distinct; 1 lat. space, greatly flat, lat. ridge exceeding 5-12 which is slight and retracted. Elliptical more narrowed behind. Tail quadrate not notched distinctly. Depressed spaces distinct, moderate large, the granules

is more or less red edged in front. Shorter very distinct over cutting through the yellow under of d. and a few black smooth not showing except a few off. derm irregular deep granular perfect but the setae transparent except (3). (1) line white. (2) green, same as eyes brown retracted as usual on the lateral ridges more numerous than before. Some papillae on the (2) tubercles, not elsewhere. (3) 2' spine. Setae large & black topped. Color as before. (1) line distinct pale yellow, d. sp. 1 upper half of lat. pigmented green, 2' sp. space whitish a transverse pale yellow line on 3 not touching (1) line and not quite reaching lat. ridge on rear edge with salmon before painting. Lat. whole leaf. No (2) line. A small white (3) line 5-13.

Figure 19 Elliptical tail quadrate a little notched at ends; dorsum fine white spines as before 2nd still distinct with stiff black topped setae. Tubercles ridges with many small not contiguous, clean nodules, not smooth, each somewhat irregular or crenate on the vertex, a few of these on lat. tubercle slightly prominent or raised a little papillae. Depressed spaces distinct rounded, all (1)-(6) present almost quite smooth under bottom. Green, somewhat pigmented d. 1 lat. a yellow (1) line 3-13, slight yellow (2) dot, a trans yellow line on 3 salmon tinted before joining the white line along 5-12 edge. 2' sp. spaces all whitish (1) (4) with distinct dark green centers, esp. on tail. A broken dark green line appears above yellow and

Figure 27 As before tubercles still distinct, the tail a little notched at the end. Setae (1) not quite as large as before. Granules dense but not exactly contiguous, round, each with a crown of rough points or tiny granules, or rough tufted actually, more papillae. Granules on bases of setae and tubercles yellowish green. Depressed spaces all pale yellow, a little pale brown yellow, 5-12 line (4) with round dark green centers. Other green edged along, (2) a row of yellow dots. Trans line on 3 just white (3) a row of salmon brown in front. The dorsal looks like fasciola (7) (6) large oblique of chitinous not pigmented. 5-12 space fine granular. 10-12 distinct whitish

Figure 6 (1st. Chan) Copy of known... quadrate (or slightly notched) 13. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)



710

*Antheraea pernyi* from von Reutenmüller  
caterpillar Stage I (June 1 1898) Hd. round smooth  
rather slight brownish-red 1.4 mm eye black setae pale  
Body deep velvety black, tubercles black  
hairs white. Seps distinctly incised. 3

tubercle for sep. a single on 12  
but evidently double ~~on~~ and a  
pair on the anal plate. On 13 and  
on 2 and on legs sep. a few  
hairs represent vii & viii but not  
forming large or distinct tubercles  
with growth no change but a series show whitish.  
Head ④ is on 2-4 and single hairs for vii on legs.  
Seps. all evidently as in reut. No prolegs I.

Shed June 5 Hd 2.1 mm purplish blackish-brown, the  
1 and mouth speck greenish. Hair pale 1<sup>st</sup> & 2<sup>d</sup>.  
Body light green the tubercles orange; feet  
including plate of anal foot reddish brown.  
Hair black slender one on ten on each  
next longer than the others and with small  
spiculate tips. 2<sup>d</sup> hair numerous  
numerous all reduced to minute yellow  
scales. Seps somewhat incised, tubercles  
with slight shaft the hairs indistinctly  
crowned. ① 12 single but compound; pair on pl.  
Later a faint yellow line along ② 5-13. and  
brown streak above anal foot.

Shed June 7 Hd 3.6 Smoky brown, ①, median  
suture, an area before the eyes, smooth

③④ with small plant  
with pale blue but not  
contrasting above eyes

and antennae whitish all the 1<sup>st</sup> tubercles a  
surrounding smoky black patch and a  
large patch each side the paraclypeal  
pieces above legs incised but not nearly  
bunched 12 highest. Bright green the whole  
rather pale orange yellow, about 1<sup>st</sup> hair  
and a leg black, the legs are spiculate  
tipped. 2<sup>d</sup> hair numerous small yellow  
scales. Traces of a brownish yellow lat. line  
② distinct brown on 12-13, and foot brown  
edged yellow before. The feet, abd. clasp a  
median ventral band brown. ① hairs all faintly  
silvery at base; ② on 6-8 with a large pinkish  
silver spot below. Spiracles brown, pale edged.  
Shed June 16 Hd 5.3 flesh color, a diffuse brown shade  
up from eyes, black spots at 1<sup>st</sup> tubercles i-iv and  
also at anal 2<sup>d</sup> ones each side after 5; a smoky band  
in paraclypeal pieces below. Labrum deeply notched  
whitish. Hair smaller ① ② cover lower part ③ pale  
blue not contrasting. 1<sup>st</sup> hair fine, the long ones  
spiculate tipped; beards 2<sup>d</sup> yellow scales also  
some coarse yellow d. hair slanting forward, the  
tips clubbed. Color as before otherwise.

Shed June 27 Hd 8 mm pinky brown, as before but black  
dots much smaller and with a faint smoky line up  
from ocelli. Green, now all pale blue. Silvery pink spot  
① 5, 6 and ② 6, 7, 8. Spiracles pale yellow with 2 black lunate  
marks. Superly line brown & yellow 5-13 expanding 1 mm  
on 13. The feet testaceous; darker abd. brownish. Hair as  
before but less distinctly clubbed tipped & scaled 2, 5 & 12  
which are marked brown, not black. Hair small, short above.  
Spun July 17




incised, SV region retreating below ridge.  
Smooth, no hairs, all fine granular. The  
blue hairs ① 4 & 12, ③ 2-13 small. Remain  
smooth, rounded. The other are obsolete, w/ yellow  
SV line on ridge. 711 Spring 1946 (yellow)

*Caligula japonica* from Am B. June 1, 1948  
Head 2.1 mm round small black, clypeus yellow  
and a large spot before eye; a smaller one  
also base of antennae and on labrum.

Body smooth, without 2' hair on tubercle.  
Prothorax with a crown of 4 to 7 smooth  
spines as high as in *Caligula* all about  
equal ① of 5 & 4 a little longer. 4 on 2-  
4, three 5-12, a single dorsal on 12, ten on  
13 ant. and a pair on anal plate.

VII without any tubercle, a hair w/ a larger eye.  
Body yellow densely with a broad black  
irregular edged band along ③ that sends  
up streaks in some of the incisures and  
a broad band across 2 and 4. Tubercles  
yellow except 2, 4 and ① 12 which are black  
as also ③ whole length. Spines black.  
Abd. feet pale; thoracic black.

Head 2.8 yellow green on face side of cheeks  
below black to vertex showing an irregular  
edge before. Jaws black. Body highest  
through 4  held angled then  
smooth skin. yellow green, a narrow  
ridge along ③. ① of 4 & 12 a little longer  
than the others. Tubercles ① 4 & 12, ① of  
2, ③ of 13, pair on anal plate and ③ of

slight prominence a little longer than the  
other granules. Feet with black hairs, and a  
few hairs on ③ 4. Hd 1.5-1.6 darker green; all  
above SV ridge greenish yellow, w/ colorless blue  
spots. ① 4 & 12 dorsal blue, feet granular, on ① 4  
2-12 turquoise blue, the rest yellow.

Spines black. Tho. feet, a broken row  
line below ③ ridge and dot in anal foot  
plate black. a fine pale seta behind  
③ on 5-12 (1/2) and several hair on anal foot.  
Anal plate > produced a square behind.

Shed June 3 Hd 4.6 (sh hd 3.1) all yellow green,  
ocelli & end of jaws black, a brown mark at  
base of jaw. Red, same shape, high and  
angled at 4; anal feet large, with narrow  
ridge along ③. ② hair on 3-12 reduced to  
round buttons with one spine. Skin rather  
densely covered with small round opaque  
2' granules. ① of 4 and 12 larger than other  
w/ blue; ① 2, ③ 2-13 and anal plate also blue  
the rest yellow. Body yellow green, the granules  
yellow, feet clearer green, without marks  
the abdominal area rather densely hairy.  
Spines whitish, not removed. The warts  
are all somewhat reduced except ① 4 and 12  
which stand out higher than before by  
contrast. Hairs spin. short, black, 4-7 crowned.  
Later d. yellow green a faint yellow line  
along ③ ridge SV region black, collar and  
anal feet blue green.  
Shed June 10 Hd 6 mm green, dorsal white dotted  
above level of eyes, base of jaws, antennae and  
ground of eyes yellow, ocelli black. Cth  
projecting, a prominent subalveolar ridge, anal  
plate narrowed behind; 4 highest, segs not



yellow brown. Feet & abd. claspers brown.  
Wing hair 1 on feet black, 2<sup>d</sup> all yellow  
with the light scales & the d. coarse smooth  
brown. Silver patch ② 6 and 7. All the  
712

*Antheraea gamma* on oak from Va. B.  
Hd 4.3 brown, shaded with emerald green,  
prominent in sutures ocelli dark, hair  
pale with 1<sup>st</sup> & 2<sup>d</sup>. Body with dark segs.  
i deep measures like *polyphemus*. 3  
tubercles, 1 d. on 12 and pair on anal pl.  
Clear yellowish green, a yellow line  
along ② 5-12, 1<sup>st</sup> feet, abd. claspers,  
A plate of anal foot\* and a line from ② 13  
to anus brown. Plate of anal foot  
edged yellow before. Tubercles small  
but distinctly named by the few hairs  
which are mostly black, a few stiff  
yellow hairs from skin<sup>d</sup>. Most  
of the numerous 2<sup>d</sup> hair are short  
club-shaped yellow scales, quite small.  
Tubercles yellow except ③ ④ 2-4, ③ 5-12  
and pair on anal pl. turquoise blue.  
Spiracles light brown. VII no tubercles  
but a black hair on 5, 6 and 11.

(\* i.e. first half of the foot, the yellow line before  
the brown patch continues to ② line, bending only)  
Shed June 5 - Hd 6.4 mm pale green with  
scarcely a tint of brown except about

warts become pale blue but not contrasted  
Spun July 4

the ocelli. Claspers small slightly notched  
at side, 1<sup>st</sup> & 2<sup>d</sup> hair present, 1<sup>st</sup> collected a  
bit. Body as before, accordin-like and  
bunched. Plate of anal foot large. Tubercles  
small, scarcely with a shaft, the seta  
slender a few long and other short, all  
blackish. Some very coarse yellow  
sparse 2<sup>d</sup> hair dorsally, distinct from  
and the fine yellow 2<sup>d</sup> scale as before.  
Clear bright green a yellow line along  
③ 5-13, 2 in front yellowish. Feet, clasp  
of abd. first part of anal foot and  
line from ② 13 to anal plate brown. Spinal  
pale brown. Hair on feet black. Tubercles ① ②  
yellowish green ③ ④ 1 line of anal plate  
pale blue. Plate of anal foot yellow before.  
Below ② 6 a small metallic silvery patch.  
neck at end edge of 2 submargin red.

Shed June 13 Hd 8.3 mm whitish green, ocelli &  
ends of joint brown. ① ② more obsolete but  
still with long hair and ③ ④ 1 line of submargin  
blue and a black line (not distinct, segs)  
well incised, 3, 4 & 12 the most prominent.  
Green, a yellow suffusing line brown edged  
above anal pl. & edge of anal foot plate  
yellow, the plate brown below & a brown  
band 13-edge plate, edge of collar is brown



713

oak

*Rhodius fuscus* from Bu B. June 1 1898.

Hd 2.5 black with 1<sup>st</sup> & 2<sup>nd</sup> pale hairs.

Body rather slender, *Lasiacampid*-like deep black with a narrow yellow line broken by ① or blotches & streaks dorsum & s-v from the line. A line above mouth yellow. Tubercles short, 3, all paired, no single on 12 but pair on anal plate. Tubs black with crown of stiff black hair that very inconspicuous and absent of the long white abundant 2<sup>nd</sup> hairs though bearing a few very long pale yellow hairs that mix with the 2<sup>nd</sup> ones. Feet black, claspers pale.

Shed June 6 Hd 3.5 Black, Δ labrum and antennae white; hair coarse, smooth

1<sup>st</sup> and 2<sup>nd</sup> yellow. Body broadly white dorsally down near to vent iii, transverse streaked with black laterally, the black cut by the white above, by yellow below. Spiracles and a lunate area before & behind each pale blue. A yellow

line along i+r+v, a little narrow lined around the vent; s-v region yellow and black streaked, venter soiled yellowish. Thoracic feet black, abd yellow the plate of anal pair deep green and marked with black dots centrally. Nuts ① ② pale yellow ③ yellow, ④ black except at summit. Throat s-v nearly solidly black; a pale median ventral line. Hair long fine, abundant the 1<sup>st</sup> and 2<sup>nd</sup> much alike, white d, yellowish s-v and at ends. Nuts low, obscurely anned with few hairs, a central one large and joining with the predominant 2<sup>nd</sup> ones, the crown more spiny and shorter some of these of the lower nuts black. [In the other blacks the white d. area is narrower, not reaching much beyond tubercles; lateral & s-v areas nearly solidly black, the lateral a little cut with white above and s-v slightly streaked with white yellow. Short hairs of ① and ② black] Substems across intersecting with black. Shed June 13 all white or nearly so.



Hd 4.5 mm. Ant all paired, 1 row and  
pair on anal plate. Leg plate large esp.  
the anal ones. Hairs round, as high as  
wide with crown of stiff dusky hairs.  
and a few long ones. ③ with many long  
hairs. Hd white, much blacker on the  
lobes. Antennae above, hairs 1st & 2nd yellow.\*  
Body white above, pale yellow s-v streak  
with black lines more or less in the folds  
of abd. region and ventrally. s-v fold  
marked with orange. Ventral yellow,  
leg 1 anal plate greenish yellow. the  
feet dusky at base. Spine and areas  
light blue. Hair abundant, long and  
fluffy, apatela like, white d. yellow  
2 and 13 & s-v. the numerous hair of plate  
short & yellow. 3 anal plate with brown  
mucron centrally. Resemble a Las-  
iocarpus and shed head scales in the  
kind the same way. The 2nd hairs  
make pale dots lat. among the black  
marks laterally. Claspers of abd. feet  
light brown. 1 & 2 all pale yellow only  
slightly dotted with black on the lobes.  
The pale one was white d. pale yellow but no  
marking, still a little black streaked but  
not rather hardly marked at all.

Calc. .17 .28 .47 .78 1.3 9at 6/10  
 either 2 stage hd. 7 can beaded with black dots  
 as with 2 some can have brown warts.  
 ♀ und July 15 1898 14 Cox W 15121

Hd 45 Same, all Spanish white, no  
marks. Molt small, hairs base, a few  
long ones at ends. Thinks flattened, feet small  
(Found June 14 1895 by mill at South-haven)

Smooth, not spinulose. D. vessel <sup>L (width) 5 mm</sup> greenish.

Shepherd 20 Hd 1, 3 anterior 1/2 apex white, mouth  
brown, a dark gray patch at apex of each side  
3 large 1 small row of warts on each seg, about a  
thick. Ground translucent white but shaded  
brown base of each wart & in irregular d. 1. Last  
quadrant with dark gray. Large warts of c-sh.  
brown behind. Hairs short, bristles with brown  
tubercles & tips, a few long pale hairs from  
extremities and D. Much dark above spiracles




late a reddish brown broken s-v shade also tinging ③ with reddish. D. vessel a blackish line. Nerves all diffuse, the appearance gray brown, bright s-v.

715 = 714

Sum 1899

noctuid egg on 714 plant singly on back of leaf. Flattened, spin a large nipple area

surface irregular circular  24 x ribbed on the sides with fine parallel cross striae; vertex not ribbed, finely reticulate.

Dull translucent waxy white. D. .55 mm. Hatched June 19. Small, rather thick, square, not level sitting on back of leaf, upper edge not straight. Hd. 2 all translucent whitish, feet green. Hair ~~diffuse~~ <sup>black</sup>, alternating, bearing not 7, 9, 11 rest pale very long, s-v shorter, pale. a few and hair very long. Hair fine, not glandular, no feet as 7. Hair slightly spiculate. Spin with fine spinules.

Hatched June 23 Hd 3 like 714 s-v.

[first spin; but I still have unhatched eggs and all stages]

quack dit

More eggs Quoque. J. L. June 22 1898. Slightly elongated in one diameter. 25 ribs a wavy line on vertex cross striae fine, making elongate rectangular cells. Nipples almost whole vertex flattened, nearly finely reticulate 4 x 5 wide, 5 high. Eggs on which leaves spun June 27. Crown a stick like *Nola trimaculata*

Aug 3. Hd. still 15; both larvae shriveled so the dorsal spots are excluded, the larvae looks shriveled shriveled and some dorsal granula. 1st inf. strike-like with 1 thread. Spining Aug 4. Purple Aug 7. 716

Looper eggs from 2 cat. no. 15440. *Brockhara*. L. J. June 14 1898. Elliptical, flattened above & below. Pale green, slightly shiny. Surface smooth, finely shagreened. .6 x .5 x .3 mm.

June 17. greenish yellow. Hatched June 22. Short, somewhat legged looper with humped thorax. Hd. small, pale brown. .25 mm. Body pale brown. a broad d. narrow dorsal sd light red lines. no ooh on anal plate. Diffuse granula. Feet a little pale. On body, nodules except anal pair (small and large ones) and spread laterally. Setae s-v small, black with large clubbed tip. The tubercle minute. Hd. setae also clubbed. C-sh roughened its tubercles slightly produced. Late pale obscure greenish with faint whitish sd and lat. lines. Spin finely reticulate shagreened. Late mostly brown d. sd (below white one) and s-v bands.

Stage II June 28 Hd with conical pointed lobes, 4 conical points a c-sh anal flap & with anal feet large the head pair small. Dark brown, pale s-v & on anal plate, feet, dorsal white points with numerous granules which separate to form 2 linear pale sd. line. a slender band across. Hd. 4. Stage III June 30 Hd 6, the lobes conical high pointed, vertex: deep notch, c-sh 9 similar conical point on c-sh ant. anal plate pointed behind. otherwise smooth slender pale dead leaf brown. Joints with fine whitish granules that form narrow obscure sd, lat. s-v line and oblique ones between sd & lat. Stage IV July 1 Hd 8 high with pointed flat lobes a little more brown on the angles and shading in the. The thorax from an x mark with clipped sutures. Point a c-sh not as high as before and simpler, and 1st with pointed projection, anal plate large. On thorax smooth greenish brown thorax white granules forming faint raised pale line. 1 granule on d. sd, sd, very lat. almost a series of oblique and so, all obscure. a series of d. narrow deep brown dashes. Stage V July 20 Hd 1.5 rough granular, as before but a whitish shield on front of each lobe. Cervical horns not tipped. All thorax and before



N. Am. & con. I

*Aphodes mimosaria*

Aug 2 1898  
Oak

817

Egg from green looper cat. no. 15041

June 16, 1898. Southaven L.I. Elliptical very strongly flattened above & below, the edges sharp like little cakes cut out with a punch; sides  $\pm$  strongly reticulate, the apices almost like granules, appearing light in strong light. Not showing bright orange color. Size .75 x .6 x .4 mm.

One end shorter than the other. June 17 reddish brown. Just before hatching, ashy brown.

Hatched June 26 Hd pale brown slightly streaked with dark. W. 25  $\pm$  body flange, spiracles 5-8 as 5-9, greenish brown with faint narrow d. & lat. brown line the latter expanding into spots at the flanges. Setae short smooth tipped. Pale. Venter darkly shaded. The flange, bear it & it remote normal. all setae incl. lat. with swollen tips. Flanges whole length except thorax, longest centrally. The larva looks dark brown. Setae quite uniform, dark brown. A few granules of dirt adhere to the sticky setae on lat. angles.

Stage II July 3 Roughened, but rigid, a slight point at apex. Tubercles all rather large esp. C-th & 13, IV & V on prominent processes 5-9; skin finely spinulose granular. Yellowish brown, the processes densely tuberculate pale; all grizzled by the pale granules. Setae pale, short, pointed. Hd 4  $\pm$ .

Stage III July 9 more roughened or processes furrowed (IV & V) and sharp 5-9 also small. Lat. point and spot; high pair of points on 2 and 13 before  $\Delta$  anal plate. Hd rounded, slightly lobed. 26  $\pm$  yellowish brown, densely pale yellow granular a little mottled with dark red brown esp. in a patch below processes. Tubercles conical, high, setae short stiff, white, no defined marks.

Stage II July 17 Hd 6  $\pm$  lat. process (5-9) furcate the ant. limb bearing 5 longest, the spiracles on the dorsal aspect, occipital 4-fur, sloping behind. Tubercles IV & V pale conical. Setae pointed on 2-4 and 12 as before, some on 10, 11. Body brown d. grizzled v. the under aspect a proportion and a series of whitish d. marks. dark brown narrow flange d. 5 d. line. Fat band distinct 10-12.

718=746

Egg from large gray looper cat. no. 15042

Southaven L.I. June 16, 1898. Elliptical

flattened finely shapeless reticulate shining, laid in a bunch of 3 to 6 not single as usual.

One end is flattened, truncate, not exactly symmetrically. Color pale grayish green (laid under wet in cover, likely under bark). Size .8 x .6 x .5 mm.

Hatched June 30 Hd round, brownish black, 3  $\pm$  and slender, whitish scarred marked except by five distinct transverse black bands which are on 5-9 and a sitting narrow one on 4. 2-3 & 12-13 a little darkly shaded. Feet all pale, normal for looper. Setae nearly invisible very short, whitish, simple and pointed, from whitish inconspicuous tubercles. Tubercles little white oak but not (see dead July 7).

Stage II July 22 Hd 1.2  $\pm$  lobed, roughened. Dead leaf brown light

just roundly, 2 dark brown d. d. marks and on 5-7. Lat. processes obliquely streaked brown. Pale below esp. 5-6, furcate as before. High, II 12 very high, many sharp pointed tubercles v. dorsal. Tubercles slight, faint dorsal dorsal pale d. d. median line, setae colored with pale granules. Setae small.

Stage VI July 31 Hd 1.6  $\pm$  lobes slightly pointed, irregular granular rusty brown. Body granular. Tubercles prominent. Lateral processes black. IV & V 5 and 9 small 6-8 large 4 conical on C-th a 5 d. d. line with 3 conical on 3 and 4, a slight 5-8 pharyngeal 10-12, II 12 on long cones, all roughened granular above head brown a little variegated, along lighter, greenish d. d. 6-8 granular brown head dark gray and with dark brown spots 6-9 ant. and a black white d. line 10-12. Spiracles dark ringed. All setae d. d. 2-4 5-9 10-12 15-16 20-22 25-26 30-31 35-36 40-41 45-46 50-51 55-56 60-61 65-66 70-71 75-76 80-81 85-86 90-91 95-96 100-101 105-106 110-111 115-116 120-121 125-126 130-131 135-136 140-141 145-146 150-151 155-156 160-161 165-166 170-171 175-176 180-181 185-186 190-191 195-196 200-201 205-206 210-211 215-216 220-221 225-226 230-231 235-236 240-241 245-246 250-251 255-256 260-261 265-266 270-271 275-276 280-281 285-286 290-291 295-296 300-301 305-306 310-311 315-316 320-321 325-326 330-331 335-336 340-341 345-346 350-351 355-356 360-361 365-366 370-371 375-376 380-381 385-386 390-391 395-396 400-401 405-406 410-411 415-416 420-421 425-426 430-431 435-436 440-441 445-446 450-451 455-456 460-461 465-466 470-471 475-476 480-481 485-486 490-491 495-496 500-501 505-506 510-511 515-516 520-521 525-526 530-531 535-536 540-541 545-546 550-551 555-556 560-561 565-566 570-571 575-576 580-581 585-586 590-591 595-596 600-601 605-606 610-611 615-616 620-621 625-626 630-631 635-636 640-641 645-646 650-651 655-656 660-661 665-666 670-671 675-676 680-681 685-686 690-691 695-696 700-701 705-706 710-711 715-716 720-721 725-726 730-731 735-736 740-741 745-746 750-751 755-756 760-761 765-766 770-771 775-776 780-781 785-786 790-791 795-796 800-801 805-806 810-811 815-816 820-821 825-826 830-831 835-836 840-841 845-846 850-851 855-856 860-861 865-866 870-871 875-876 880-881 885-886 890-891 895-896 900-901 905-906 910-911 915-916 920-921 925-926 930-931 935-936 940-941 945-946 950-951 955-956 960-961 965-966 970-971 975-976 980-981 985-986 990-991 995-996 1000-1001 1005-1006 1010-1011 1015-1016 1020-1021 1025-1026 1030-1031 1035-1036 1040-1041 1045-1046 1050-1051 1055-1056 1060-1061 1065-1066 1070-1071 1075-1076 1080-1081 1085-1086 1090-1091 1095-1096 1100-1101 1105-1106 1110-1111 1115-1116 1120-1121 1125-1126 1130-1131 1135-1136 1140-1141 1145-1146 1150-1151 1155-1156 1160-1161 1165-1166 1170-1171 1175-1176 1180-1181 1185-1186 1190-1191 1195-1196 1200-1201 1205-1206 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Sept 26 1899 Genus X

719

Eggs from larva 15046 Brookhouse 29 June 17 1898. Rounded elliptical, flattened above & below but not in a plane, perfectly rounded; one end truncate, the truncate part bulging in its center. Surface reticulate, the cell areas flattened slightly polyhedral. Pale green, somewhat grayish, shining.  $8 \times 6 \times 5$  Single. Hatched July 1. Hd. round, brown black & pale, 3+ Body slender, normal, white with 5 smoky brown-black trans. bands on 5-9 and slight narrow ones on 2-4. Feet pale. All like BB 718. Also seen on 4 color not quite so dark as 19, bands a little broader and connected by a narrow dark lateral line [Died July 3 refusing food]

*Therion pellucidaria* (v. 753)

720

*Notodonta georgica*? I on black oak, Brookhouse 29 June 18 1898. Hd. broad slightly bilobed, mouth pointed; pale brownish shining, a smoky band up from eye and across vertex leaving the face pale; w. 6 mm. Body shining smooth, 12 a little enlarged, seg. faintly 3-annulate. Tubercles small normal (outprimaries absent), those with 6th anal & 6th plate black. Body and feet green a diffuse dorsal reddish shade 4-13, more distinct posteriorly, a red-brown line along subventer and base of all feet widened into a distinct patch and darkest on segs. 5, 6, 11 & 12, also slightly widened on 7. Tho. feet black, setae short black, stiff not glandular. Tubercles 12 on 11 & 12 trapezoidal, in other segs. square. Shed June 20 Hd. 1.1 as high as wide, beak notched, flat before & small; andid greenish smoky black at posterior edge of cheeks




almost 4 vertices. Body pale yellowish, dorsum  
broadly diffusely red-brown, subventer distinct  
as as before. Tubercles <sup>except minutely</sup> concolorous, feet, except  
anal which are whitish, black. No shield.  
Setae dark, small, stiff. Sd (below ii) lat. and  
stig. yellowish lines faintly indicated.

This 4 red shade gradually fades out pe-  
sisting longest on 12-13. Body rather  
transparent whitish green, poorly pigmented.  
Shed June 27 Hd 1.8 high bilobed white & black  
line eye to jaw. Body white & brown darkish  
translucent, Sd white lat. again translucent  
greenish; lat. line narrow faint yellowish; substig  
yellow with red-brown dots & forming narrow  
line & tinging bases of feet. 12 high centrally, i  
tubercles reddish and yellow side line behind  
ocelli. Leaves strong vein for furca.

Shed July 1 Hd 2.7 regula gurginea

Shed July 7 Hd 4.2

721

Tiny egg on Clathra alnifolia Quogue  
L. I., June 22 1898. Spherical above & a  
little pointed at vertex, base flattened  
slightly. Smooth, shiny, not reticulate  
colored, translucent.  The embryo  
giving a reddish shade. Diam. 1 mm.  
Hatched June 27 (and not find larva)



July 9 all away and out red & J (big box)  
July 10 entered cork, throwing out dust.

Oct Oct 10 1898 *Diphthera fallax* Hs.

Cert no. 15767 722 @ Oct 11 '98

*Opachla* egg on *Morimus dentatus* Southw.

23. June 23, 1898. Circular, much flattened,  
dome, 48 ± ribbed, diminishing by confluent  
to vertex which is irregularly reticulate,  
ribbed. Rib slightly fluted, the spaces  
smooth, finely punctate throughout, no cross  
striae. Microscopically smooth. D 1 mm, height .2 mm.  
Heavy white, slightly shining, no marks.

Stage I. Hd. 25 rounded, eye black, mouth brown,  
translucent, colorless. Body translucent, slightly  
whitish, segs. convex, hair white, spinulose  
i-v, i slightly blackish except on 11 which  
looks paler. Hair equal, quite distinct, is  
above v, no subprimaries. Feet normal.

Stage hd. 4 colorless, slightly bilobed. Warts absent  
in line trans, is nearly imperceptible, all  
with central hair and distinct crown of long  
hairs. Hair pale except central of i-vii  
which are black. Translucent, green from  
food, faint traces of a white sd line.

Shed June 26 Hd. 757 Somewhat flattened esp.

With growth from sides not, with apper-  
as oars only (smaller at ends & spiracles)  
all velvety green, soft, not opaque, smooth  
hair as in description as skin spinulose, and  
number of the 3 narrow whitish lines.

belonging, hd. retracted at apex. Hd whitish green  
body clear green with narrow white sd line  
and broken dorsal one. Warts moderate, i-vii  
20, is behind upper edge of spiracle, v just below  
about equal vi large. Hair quite numerous short  
pale & black mixed spinulose. Body narrower behind  
later warts all marginally pale brown.

Shed June 28 Hd 1.4 mm rounded, green, a diffuse dark  
brown shade on angles of lobes. Body short and somewhat  
flat, anal feet spreading. Green, warts i-v per-  
sistently brown, the d & sd line narrow, broken  
white. Hair very short, fine but numerous  
from all the warts, yellowish brown mixed with  
pale stem finely brown spinulose. Warts i-vii about  
in line transverse, is behind spiracle, v very narrow  
and below it. vi smaller pale somewhat hidden  
by plate circolorous green, with pale bases.  
Late all warts i-vi brown, a brown ring around spiracles  
ii on 24, 4, 6 and 11 have slightly larger brown spot  
and there is a slight tendency to form a brown  
stripe along ii. Larva short, thick, somewhat flat.  
Hd newly whitish, body clear green.

Shed July 3 Hd 2.4 rounded, green, wrinkly, black dotted in 13  
body flattened short & thick, feet normal, of just size  
warts many obsolete, not elevated and the hairs change  
still numerous, very short and fine, minute, invisible  
without a lens, the hairs looking hairless. Smaller behind  
Soft velvety green the skin densely minutely spinulose  
narrow d. & dorsal & sd pale lines faint, not  
contrasting. All the warts brown faintly marked i  
velvety red-brown, the spiracles also and tips of feet  
the most distinct spots being on front edge of col,  
small in 12 and a dorsal patch on 13 before  
the sd line which closely approaches each other then  
Hair on head, and edge of 2 and anal pl. rather  
coarse and distinct the rest rudimentary. Spin-  
acles black. Larva appears much behind and its  
warts short going the least alone.



723 all dead from '99

Looper eggs on *Whurmus dentatus* Southaven

I.D. June 23, 1898. 9 together on back of leaf

Elliptical, flattened above & below but all  
ends rounded, one end slightly truncate  
and curves in middle of truncation.

Shining pale yellow. Surface egg-shaped  
not reticulate smooth.  $8 \times 6 \times 5$  mm.

One end opposite the slight truncation is

pressed down, the upper & lower surfaces convergent

**I** June 29 Hd. round pale brown .3. Body slender  
black with a broad white lat. band 2 - anal feet  
pale. Setae short & pointed, black, with rather  
long pale tubercles. A fading all greenish gray,  
the white side line faint, later on

**II** July 3 Hd. .6 pale brown somewhat darker eye  
black. Dull green, nearly uniform, a sooty shade  
present dorsally on 12-13 and slightly streaky, the  
thorax and also ventrally shading the feet a little  
Setae short, dark, inconspicuous, a long slender loop  
on 12-13

**III** July 8 Hd 1.1 whitish below, dull black on the vertex  
the lobes black dotted, rounded. Greenish conical,  
many at the ends and feet, and along lat. line;  
darker finely marked with numerous longitudinal  
lines (about 12) which are blackish & distinct on thorax  
and 10-13 but faint in middle of body. Setae dotted  
with black. Feet the dark scattered setae of VII  
and VIII. Feet lined with black. Setae short pale  
tubercles moderate. All smooth slender no hump  
Appearance dotted black d, grayish ventrally. Head steeply  
set off sharply bent down forming an angular ant. projection

726 **IV** Hd pale yellow thick dotted  
with brown leaving yellow line on the  
sides and on a vertical line on the  
face of each lobe. Red yellow dorsal  
with brown forming 4 irregular, 1 black  
line between the yellow d. line and  
satisfying form a lateral brown line  
thorax and obscurely appearing on  
met. around foot and a broad  
anal plate large yellow och. stripe  
like body. Tubercles small dark &  
pale ones, 14 on line, 10 on  
approximate with another above  
dorsal one and 2 hairs; one before  
legs annulate, all granular. Feet  
10 tubercles. 5. 1. begin dark brown  
reticulate & curved from above

**V** July 10 Hd 1.5 greenish, dark brown  
mottled, on vertex streaks leaving  
irregular pale areas. Red yellow hind  
longitudinally with brown at apex of  
lat. the mottled yellow line thorax  
and annulate all over, the brown dorsal  
on ant. 1 of body as part of faint line  
between centrally by ridge, tubercles  
prominent, dark brown on the thorax  
elaborate forming dentition. Ventrals  
pale translucent. Feet pale the anal  
feet short with crochets & clifae,  
spiracles black. Ant. weak & coarse by  
uniting 2 leaves and faint hairy stem  
around 1 from thorax across opening  
Aug 4 Hd 2.1 though no signs of hairy  
shad. On the 1.5 on ant. 12  
Aug 10 Hd 2.5 & 2.7 and higher the anal  
feet & a few threads of anal hair.



726 IV Hd pale, yellow, frons dotted  
with brown. Body yellow like on the  
subventral and on a vertical line on the  
face of each lobe. Body yellow dotted  
with brown forming 4 irregular spots  
between the yellow of hind and  
sail-like fold a little heavier. Head  
dusky and obscurely appearing  
black around front and 3rd body.  
Anal plate large yellow, ochre striped  
like body. Tubercles around dark to  
pale ones. 14 or 15 on line, succeeded  
approximately by another apical,  
brown one and 2 hairs; even before 3  
sag. annulate, all granular. 1st  
10 tubercles. 3. 1st pair dark brown  
retroventral & anterior from above.

Aug 30 Hd 1.5+ ground, with dark brown  
 mottling on ventral streaks leaving  
 irregular pale areas. Body yellow band  
 faintly defined with brown. ad. head 50  
 look, the mottling yellow. legs brown  
 and somewhat olive, the brown dark  
 on ant. 1 of body on post. 1/2 fainter and  
 broken centrally. 50 ridge, rather  
 prominent, dark brown on thorax  
 elsewhere fainter. ventral  
 part translucent. feet pale. the are  
 very short with arches 2 ellipses.  
 spines black. Aug 1 made a case by  
 lining 2 leaves and partly filling them  
 with spun threads. Aug 4 hd 2.1 though no signs of hatching  
 noted. So the 1.5+ on case 1/2  
 Aug 10 k 1.5.6 + 2.1 and 2.1 further the hatching  
 noted, after a brief interval.



Sound	.3	.5	.8	1.2	2.1	2.7
Case	.27	.45	.76	1.26	2.1	3.5 $\frac{6}{10}$

Over process; irregularly shaped; dark yellow, brown mottled with brown spots which form streaks about .5 and leave a pale space above the face of each lobe. Head dull greenish yellow, lined with some opaque pale yellow in d. straight and sd lat, anteclypeus & s-v oblique oblique & dislocated line the s-v slightly away along the furrow and s-v fold. Space between them line filled in with dark brown at the extremities of, i.e. in 3 bands on thorax and s-v and in irregular spots on 13. Sphenal black rounded C-th large with two brown bands on each segment half. The first part 12-13 which is dark spotted brown becoming golden and assuming, imperfect, the appearance of a round area, a little flattened about the size of the hole in the case. Case of 2 leaves mounted, the holes were circular at each end by thread. Aug 26 about 1/2 and end of the case with thread was stopped making from Aug 28 evidently hibernating. Inflated

Set 21 1899



723 ac dead from '99

Yosper egg on *Whurmus dentatum* South Haven  
I.D., June 23, 1898. 9 together on back of leaf  
Elliptical, flattened above & below but all  
ways rounded, one end slightly truncate  
and convex in middle of truncation.  
Shining pale yellow. Surface egg-shaped  
not reticulate smooth.  $8 \times 6 \times 5$  mm.

One end opposite the slight truncation is  
pressed down, the upper & lower surfaces convergent.  
Hatched June 29 Hd. round pale brown. 3 short slender  
black with a broad white lat. band 2 - anal feet  
feet pale. Setae short & pointed, black, with rather  
large pale tubercles. On fading all greenish gray,  
the white side line faint, broken.

St II July 3 Hd. 6 pale brown smooth darker eye  
black. Dull green, head uniform. A rusty shade  
presents dorsally on 12-13 and slightly streaky the  
thorax and; also ventrally shade the feet a little  
setae short, dark, inconspicuous, a long slender hair

St III July 8 Hd 1.1 whitish below, dull black on the vertex,  
the lobes black dotted; rounded. Greenish convex,  
orange at the sides and feet, and along lat. line,  
darker fine marked with numerous longitudinal  
lines (about 12) which are blackish, distinct on thorax  
and 10-13 but faint in middle of body. Setae dotted  
with black from the dark scattered setae of VII  
and VIII. Feet lined with black. Setae short pale  
tubercles moderate. All smooth slender no hump  
appearance violet black d, grayed ventrally. Held straight  
d & c sharply bent down forming an angular lat. projection

longitudinally

gaster at 3; rigid beaked & a thread, St IV July 13 Hd  
1.4 mm gray, mottled, d and an angular line before occipit  
white a slender black band a dark lat. line raised  
3 d. pale ground above d. Hd round. 3 rounded elements  
dorsally with a lat. fleshy fold or prominence shaded  
like a cat's ear (not hollow). Body otherwise smooth, except  
tubercles are rather prominent (not smooth) on 8 & 9  
being esp. high. Feet 13 large, anal plate with a pair  
of fleshy prongs. Lilac gray, fine lines with black  
alternating with fine whitish line. The black is pulverulent  
& diffuse d on 10 & 11 washed out by a pink delution.  
Tubercles, esp i, ii, vi and the scattered 3 of vii black. Stip.  
gold pale; spiracles black ringed. Black line about 16  
in subline but broken down by lilac line and the  
alternating pale line (esp 8 d, lat, sty) are more distinct  
folds on 3 marked whitish, as also the high ii of 8, 9  
on the outside (anteriorly they are black). Quite uniform  
dark reddish gray, whitish d. part. Lilac streaks, the  
head retracted and with ears a 3 later smaller and  
St V July 18 Hd 2.1, pale uniform, dotted with granular brown  
which give below a series of diffuse concentric lines crossing  
d; apex retracted. 2 tubercles, the lat. angles of 3 produced  
& prominent, all the part inc. cth and ear produce a front,  
and 3 lat. ochreous shaded with rusty brown, then the  
lappet and a slight is a suggestion the broken end of a  
ring. Body uniform, moderate, smooth the tubercles  
distinct on 8, 9, 10, 12 produced, high, esp 8, 9. Feet  
projecting lat; 12 long subventral prongs. All uniform  
dark bank color, purplish brown a little darker  
with dark red-brown and cinnamon shades; d on 10-12  
a broad light ochreous or iron brown shading mottled  
a little with dark red brown, preceded on 10 by ashen.  
Lines all obsolete, a dark d. formed on 12-13, and the eyes  
lids less mottled ashen & black  
Setae black short, pointed. Spiracles dull brown black d  
a handsome tank looper with a rough club and at head  
line was broken, tube marked with crinkly black  
lines and light patches d. and anal and d. patch  
light. Pale ochreous. Spun July 25 between leaves  
St VI & a few threads of thread silk.



1899

(721)

Same brown patch on back but layer of stippling.  
10-13. Stippling patch on 6, 7 distinct; 11 of 7 and 10 a black  
enlarged, distinct brownish opaque yellowish green, a  
the brown shaded, 11-13 brown shaded, 11-13 brown shaded  
but on 3-11 black whole length, largest (7) 7  
and 10-13 all brown 725. suffused, 8 very pale  
distinct, collared. Much variation in amount of brown  
Eggs from 15077 Brookhaven L.I., June 1899

28-29 1898. Several together, usually in a straight  
row  $\frac{1}{2}$  of 5 to 9, sometimes more irregularly.  
Elliptical, scarcely flattened, but of several shapes  
one end distinctly truncate, a little convex, the  
other rounded. Neatly distinctly reticulate, the  
cell areas resembling round pits like a thimble,  
truncate end above. Highest bluish green, shining.

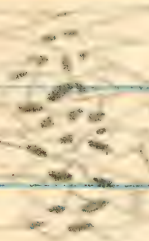
.6 x .4 x .3 mm. Non truncate ends little depressed.  
Sons turn drill reddish, a dark red spot on truncate end.  
Hatched July 7 1st inst. pale brown, .3 + mm  
body whitish translucent, a rather broad pale  
cinereous sub dorsal line running down and behind  
area pale. a cinereous dash on anal segment.  
Setae fine white pointed obscure. Abdomen  
pale grayish, obscurely mottled, little white on the  
lateral translucent area, no hairs, no markings.

Sheet I Aug 15 Hd 4 ± acorn, slightly lobed, pale brown. Body  
 brown smooth glaucous whitish green, fine creased annulate, not  
 shiny, no warts; no projection. Another 9  
 Sheet II Aug 22 Hd 1.5 (hd below .55) acorn, slightly lobed brown,  
 green. Body brown to black on sides of lobes. Body smooth  
 yellowish white with spots the fold, along which is a faint  
 darker green band 3-15 (blackish) spiracles dark  
 Sit out at on 2 with thousand gear minute. Seps annulate  
 on vent. half ventral ch. Sheet III Aug 24 Hd 1.3 head lobed  
 green. Body green Albino 2 times out 13, elsewhere opaque  
 yellowish green. A brownish suffusion on 16 seg. Spiracles shg  
 in black patches. Elongated central seg. folded annulate  
 approx 1/2 - last fold rather distinct. Smooth, no warts.  
 A reddish suffusion on the sides Sheet IV Aug 28 Hd 1.8



long, laid on the edge of leaf or on a point.  
Cylindrical the ends rounded and a marked  
central constriction; base flat, a little spreading;  
a longitudinal groove along the lower part of  
each side; 6 longitudinal striae, not marked  
except for ridge the 26<sup>th</sup> 38<sup>th</sup> part of surface fine  
shagreened. Shell white 1.4 x .4 x .5 high mm  
of Chondola? Belfast I.I. July 8 1898. on

upper side leaf of *Q. tinctoria* in a web.  
web 8 x 5 mm I.H. 1.3 mm Hd. dusky dark brown



dusky laterally. s.v. region  
pale whitish brown. Skin  
smooth, segs. 3 annulate  
setae short and pale but  
darkish with enlarged tips.  
i, ii, those of c. s. are broad and

especially short and paddle-shaped. Later more  
cross-threads, none of the anchors, strong with fine.  
[lost]

725 Cont VI Aug 1 Hd .5 green w/ centrally and venter  
band of blackish white purplish brown over the side of  
each lobe darkest part. Rounded lobed distinct higher  
and wider than 2. Body cylindrical smooth, a collared  
chestnut on dorsal half of 7 (11 and 12), 11 and 12 of 10  
and 10 of 6 with slight elevations, the dorsal tubercles  
all a little prominent. Dorsal part shiny under  
ground green, all shaded with purplish brown, the  
dorsal annular markings 10-12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Spun Aug 16.

July 11 1899

727

July 20 1.4 lat Bury Park, July 20 1898, small like  
2.1 1.4 lat *gascia* II but on *Ryania*.  
Elongate elliptical long! brownish before  
round graduate behind. D. space  
broad, flat, narrowing before. Lat. space  
narrowing must behind. Ridge large  
tubercles not broad, slightly  
alternating 2d. Spines black tipped.  
Skin very fine, cuticular, & densely  
appressed, flattened granules, the  
granules of some with single point  
and a tubercle and each large  
coarse 2d spine half as long as  
the setae. Rep. spaces all indicated  
but faintly. Colorless, no pigment  
yellowish translucent scarcely green.  
[Also 2 eggs unusually thick and yellowish  
less than usual 1.5 x .9, 1.4 x 1.0 mm  
height probably .2 mm. Ret. distinct coarse  
meshes, also somewhat shagreened.  
Rather opaque faintly yellowish slightly shiny  
hatched July 27. *P. scapha*! none  
were missed by *scapha* 40. There  
were plenty of large flat colorless  
granules of 2d stage also few eggs  
The *gascia* died.

*Attoth* Southbury July 11 1899. Hd .5 Same,  
d. setae with long sp. Basal half brown with  
several fine pale lines. s.v. whitish. Shape normal  
cylindrical, not constricted, head and tapering, not  
truncated. Legs 3-annulate, annules 1 large but  
shiny dark brown. Head .8 pale brown, dotted and  
with a narrow pale yellowish line that continues  
the dorsal line. Body, a spot circled by pale  
each side of eye. S. s. pale. The upper ones  
with bulbous tips. Head slightly longitudinal



Calc. .5 .71 1.02 1.46 2.08 2.97

5 7 ± 1.1 2.0 2.5

728

23 8/8

Noctuid on cat-trian Brown Park, W. Va.  
July 20 1898. Egg a little high spherical the  
base flat. 12 sharp ribs run to the <sup>vertices</sup> ~~apices~~  
which is large, circular, reticulate with a  
central elevation of microphyte;  $\frac{1}{3}$  the way  
down these nearly alternate with 12 other  
ribs: 24-ribbed at base. Ribs straight, spaces  
nearly distinctly cross striate. D. 8, H. 7 mm.

Hol. 5 Rounded, more or less pointed, shiny yellowish. Body translucent at base and 12, white, sharply tapering at 13 which is colored under 12. Translucent yellowish, shiny and sticky like a slug, foot showing by transparency.

Sets: minute and pale tubercles obsolete; not glandular. Curl on back of leaf. <sup>but, minute</sup> 6 together.

Hd. 12 whitish carapace, shiny. Rostr. as before  
but less yellowish, shiny but not striate  
and green from the food. 2 ant. yellowish  
and sides. 112 whitish from the large trackway  
Feet normal. Setae mostly imperceptible

726 with brown and pale yellowish - a general brown dorsal line; a broad sd line, continuous with the brown sides of the head; S-V ridge prominent, pale all with sparse pale granules. 2 as wide as head, post half of body underd laterally; 13 small. S-V

Phed. 824 Hd 1.1 small for body, somewhat  
retracted pale luteous. Body robust, thorax  
and 12 enlarged, 12 somewhat angulate.  
Skinny translucent green, all dark green from  
food; three white spots on seg. i and ii and a  
dot (without seta) before ii in line with it.  
On thorax i a, ii and a dot before.

Shedgiger Hd 2.0 { small, thin, no large  
dark band but is sharply limited, de-  
cending  $\perp$  to anal feet. Eyes, somewhat  
opaque d. vesal clearer & darker green.  
Hd thoracic green. A moderate band some-  
what diffuse white stig line faint as other  
ends. Subcostals, cu and disk before is distinct  
half yellow into darker near wings; IV-VI  
small and white. It opposite upper corner of  
spiracle except on II where it is below lower  
corner. Shed Jul 29 Hd 2.5 Same; stig line  
deeper <sup>white</sup> spiracles ~~the dorsal~~ appear  
more a white dot before spiracle.

translucent, deeply green, fluted white to S-V.  
any, turned black, all the dots yellow to

Went about Sept 11 1898

Adena viridoides Gn

726 Region's barn, contracted, Setae short, pale  
with small silver-tipped secondary ones.  
not 10x13 mm. ~~n-g~~. Jg 12 ate a sil-  
pin edge of leaf to (pink) made over at one end. Jg 16  
dark red dot posterior and faint to strong at base of stem  
at IV-JV 5.12 Not 1.2m IV See later



$$729 = 226$$

Noctuid in pea pods Plattsburgh N.Y.  
 July 22 1898. Hb reddish, a curved brown line  
 from antennae to edge of coh below which  
 white, <sup>most dark</sup> w. 2.1 ± body smooth, setae pale  
 from moderate tubercles which are in very  
 large blackish common areas, i and iv  
 largest and iii a before spiracle, citta at  
 middle or upper corner; setae of iv opposite  
 middle of spiracle. Minus brown, d. fol  
 stripe white broad; subventer below  
 v whitish line forming a band w/ on  
 thorax. Cth reddish, edged with black  
 on the lower margin. Anal plate the  
 same but more luteous and with a broader  
 anal, side edge; both distinct cornified  
 abd. feet pale, shield scarcely cornified; tho  
 feet blackish. D line  $\frac{1}{2}$  as wide as space i-i  
 sd fills in all space ii-iii. Shields not broad  
 (Ant Sept 8, 1898) *Hydroecia*  
*cataphracta*

730

Aug 3	1.1	5 1/2
" 4	1.2	eat
" 5	1.4	"
" 6	1.7	"
" 7	1.8	to shed
" 8	2.2	eat
" 9	2.4	"
" 10	2.5	to shed
" 11	"	"
" 12	2.9	eat
" 13	3.3	"
" 14	3.4	"
" 15	3.8	to shed

*Rhopala litte* Gray back, on chest  
ant, Morris Plains N.J. Aug 1 '98  
colorless, feet green, shape normal  
spine distinct posteriorly pronged,  
weakly alternating, normal  
skin smooth, shiny. [fascicle?]  
Lumata before, curved, a little posterior  
behind, 1st space rather broad  
equal. Spine slender, rather long  
No distinct central yellow streak  
Shed Aug 4 9 space rather narrow  
ridges undulating prominent below  
D appressed ant. Skin black tips  
very pale 2<sup>nd</sup> spine on ridges, skin all  
densely fine continuously pitted  
normal the granules scarcely appressed  
rather long, heads bent quadrately  
all colorless but slightly green.

at end of stage ridges very slight thin d. sp. filled and flat.  
Emberles small & rather remote. The incisures are  
not distinct and the deep spaces not shown by  
holms all finely shagreened granular. No 2<sup>d</sup> spines  
on sd ridge nor on skin, only on the small lat. tu-  
bercles, not spreading off as in 733.

Shedding Luke's ascetics III.

Shed ring 12 " " " IV broken sd line & d. rings  
= formula (give to Jontel)



Cocoon spotted dark fluff and spin white  
silk between parts bitten leaves.

Out in August 1898 *Inura*  
731 *delineata*

Noctuid (mby) on gum tree Glendale L.I.

Aug 3 1898. Egg Low domed, flat, edges very  
thin, flat like *Apantata*. Surface smooth with  
numerous rows of little elongated beads radiating  
regularly, about 160 rows around margin, the points  
of divergence in number not perceptible as the  
surface is entirely flat and the beads not con-  
spicuous. Translucent colorless, green from leaf  
hatched (wormy).

③ ③ ⑤ ⑥ ④ ①  
Hd .45 .8 1.9 2.5 1.2 (3) Stage I Hd bilobed, long,  
shiny pale brownish. Body slender, translucent  
ochraceous yellow, setae normal. Long stiff  
brownish fur. rounded brown smooth tubercles  
on behind spiracle about equidistant III & IV; visible  
on marks, feet normal. Stage II Slender and  
feet stretched out behind, thorax enlarged. all pale  
yellowish, rather translucent, the feet showing green  
darkness in the axillary white yellow. Skin a  
little shiny smooth, seg measures 4-11 very  
well marked. Fat slender. Setae fine, rather

Head pale whitish. D. vessel dark and  
pulsating. IV large. edge spiracle L 23 mm  
Setae flat on back of leaf. yellow edge to cot.  
and anal plate.  
long tubercles obsolete. Stage III Hd translucent  
pale yellow. Slender, smooth as before, but the  
measures 5-11 folded and prominent in pale  
yellowish pigment giving 6 faint transverse  
pale inter seg. bands. 4 tubercles on ant-edge  
of are minute black. Setae smaller than  
before except at ends. no other marks.  
Stage IV less slender, thicker and a little flat.

### *delineata* Gu

I follow the determination in H.M.  
This is the gum tree larva with  
described by Eschschl 1835

as *I. gracipalata* Gu.  
The larva mentioned in Guenee  
has a different first segment &  
it is possible that Guenee  
was again confused with the species  
larva, as he has done

Stage several larvae in the  
and in *Apantata*.  
light yellowish marks as before but a trans  
black dots (below seg) except dorsal 13-14 then  
almost black also line; dots more numerous (12-18)  
some irregular. No black dots on. Spiracles  
brown below narrow white sky line. Setae pale  
long seg. tubercles obsolete, not colored.



delimited in

I follow the determination in H.M.  
This is the green tree larva which  
described by Eschscholtz 1835  
as D. gracilata Esch.

This larva mentioned in Guenee  
has a different first joint &  
it is possible that Guenee  
has again confounded the species  
larva, as he has done  
several before in the  
Apatidae.



Are

As



Cocoon ripened dark flnd and spun white  
silk between parts like leaves.

Out in August 1898 *Trupia*  
731 *delineata*

Noctuid (only) on gum tree Glendale L.I.

Aug 3. 1898. Egg Low domed, flat, edges very  
thin, flat like *Epistata*. Surface smooth with  
numerous rows of little elongated beads radiating  
regularly, about 160 rows around margin, the points  
of division in number not perceptible as the  
surface is entirely flat and the beads not con-

spicuous. Transparent colorless, green from leaf  
D 1.2 H 2.2 mm

Hatched (wormy)

Hd. 45. 8 1.9 2.5 1.2 3 Stage I Hd bilobed, long,

shiny pale brownish. Body slender, translucent  
ochraceous yellow, setae normal, long, stiff  
brownish from rounded brown annular tubercles  
iv behind spiracle about equidistant iii & v; vi gone.

No marks, feet normal. Stage II Slender anal  
feet stretched out behind, thorax largest. all pale  
yellowish, rather translucent, the feet shiny green  
darkest in thorax. Hd whitish yellow. Skin  
quite shiny smooth, seg. microns 4-11 very  
well marked. Feet slender. Setae fine, rather

feet pale whitish. D. vessel dark and  
pulsating. iv lower edge spiracle. L 23 mm  
Sit flat on back of leaf. yellow edge to cth  
and anal plate.

long tubercles obsolete Stage III Hd translucent  
pale yellow, slender, smooth as before, but the  
microns 5-11 folded and annular in pale  
yellowish pigment giving 6 faint transverse  
pale interseg. bands. 4 tubercles on ant. edge  
cth are minutely black. Setae smaller than  
before except at ends. No other marks.

Stage IV Less slender, thicker and a little flat  
translucent green, head slightly whitish; body  
tapering behind. Interseg. bands supplemented  
by a broken sd and anticum straight stig.  
Bands pale yellow the sd consisting of a dot  
behind and a dash before it, distinct except in  
thorax. Head a little greener. Setae pale. Feet dark.

Stage V Hd dull yellowish, translucent. Body  
green marked with opaque yellow. 12 short  
trans interseg. d bands to level of iii that  
13-14 broken into 3 dots. Many irregular dots  
about 9 in each side above straight narrow  
superstyg line and 9 below it, none on the  
tubercles which are concolorous w brownish  
(iii-v. brown) 4 black spots cth and. yellow line  
in anal joint anal foot, iv lower edge spiracle.

Stage VI Hd retracted at apex, same. Body thick  
and flat 11-13 tapering anal feet outstretched  
backward all with long claspers. Head  
normal, yellow green, clear but opaque skin  
light yellow marks as before but d trans  
bands shorter (below anal) except dashes 13-14 that  
almost touch stig line; dots more numerous (12-18)  
some irregular. No black dots cth. Spiracle  
brown below narrow superstyg line. Setae pale  
long s-v, tubercles obsolete, not colored.



On lower branches  
of trees like fur back.  
Solitary on under side.

Another on white oak, Chain Bridge  
Va.

732 [see 1386]

		to shed			
		(1)	(2)	(3)	
Aug 28	7.7	2.8	4.6	4.6	Green flange on beech, Rosabyn Va, Aug 6/1891
"	7.9	3.1	4.6	4.6	ST III A Elliptical flattened. Dorsal
"	8.3	3.2	4.8	4.8	space narrow, groove-like between the bases
"	9.4	3.6	5.4	5.4	of the horns. Lateral and sr space also
"	10.0	4.4	6.3	6.3	small mostly occupied by the large bases
"	11.5	4.3	6.2	6.2	of sd horns. Sd horns on 4-12 long, blunt
"	12	"	6.0	6.0	and rather thick, a little tapering and
"	13	5.2	6.8	6.8	projecting laterally parallel to leaf
"	14	6.3	7.0	7.0	and not far above it. of equal length
"	15	"	7.5	7.5	except 4th 6th 8th pairs of the 9 pair (joint
"	16	"	8.5	8.5	7, 9 & 11) which are shorter, about 2/3 the
"	17	"	9.0	9.0	length of the other. Horns of 3 lateral
"	18	8.5	10.0	10.0	whole length and sd of 13 short, like
"	19	9.0	11.0	11.0	the sd but about 1/2 the length obscured
"	20	9.5	11.5	11.5	by the ruderals. Sd horns at base
"	21	10.0	12.0	12.0	above a rounded button-like prominence
"	22	10.5	12.5	12.5	distinctly constricted off from the horn.
"	23	11.0	13.0	13.0	and as high as wide. Hairs moderately
"	24	11.5	13.5	13.5	numerous, on all the horns, short, stiff
"	25	12.0	14.0	14.0	colorless with tubercular bases, color
"	26	12.5	14.5	14.5	green, mostly in the tips of the horns. The
"	27	13.0	15.0	15.0	skin is thick and transparent,
"	28	13.5	15.5	15.5	the pigment forming a small green core
"	29	14.0	16.0	16.0	in the horns. Regions between mostly
"	30	14.5	16.5	16.5	colorless. [I count 19 long 13 short horns but
"	31	15.0	17.0	17.0	am not sure of the short ones. of A.K. I give
"	32	15.5	17.5	17.5	3 horns on 3 & 4, 1 on 5 and 1 on 6-12 as in. Prothetrony
"	33	16.0	18.0	18.0	Skin with sparse fine clear granules. There are
"	34	16.5	18.5	18.5	ST IV B (no 3) Sd horns all long, equal
"	35	17.0	19.0	19.0	otherwise the same in shape and color.
"	36	17.5	19.5	19.5	Same like the horns and grow new ones.
"	37	18.0	20.0	20.0	Three horns on 3, upper quite long, but sub-
"	38	18.5	20.5	20.5	ordinate to the others of sd. now middle small, lower
"	39	19.0	21.0	21.0	very small and without basal button. There are 4, upper
"	40	19.5	21.5	21.5	a functional horn, others in a pair below it. Sd of
"	41	20.0	22.0	22.0	5-12 equal to sd 4 and very nearly uniform
"	42	20.5	22.5	22.5	sd 13 quite small, subordinate. Lateral 6-12
"	43	21.0	23.0	23.0	small, but all haired like the sd. Basal
"	44	21.5	23.5	23.5	buttons hemispherical with the same clear
"	45	22.0	24.0	24.0	spiny hairs. Skin finely setose granular
"	46	22.5	24.5	24.5	Color green from the horn cores as before.

ordinate to the others of sd. now middle small, lower  
very small and without basal button. There are 4, upper  
a functional horn, others in a pair below it. Sd of  
5-12 equal to sd 4 and very nearly uniform  
sd 13 quite small, subordinate. Lateral 6-12  
small, but all haired like the sd. Basal  
buttons hemispherical with the same clear  
spiny hairs. Skin finely setose granular  
Color green from the horn cores as before.

Shed Aug 23 not like no 3 much less fluffy  
though hairier than before. Feather hairs most  
a little between horns but the coating is thin and  
does not show the structure. Otherwise same,  
Shed Aug 27 Fluff

only smooth setae on the horns — except the  
terminal primary ones which are slender  
with truncate conical base — Sd horns have  
a small, indented base, then the rounded knobs then  
the horn ~~etc~~ sparsely spined. Skin glassy, shiny.

Shed Aug 8 29 Sept still shorter than the other but  
about 3/4 the length. Elliptical and flat as before, the  
blunt ends horns radiating from the disk of  
discum. Hairs on bases of horn and bulbs all simple but  
a few of these toward tip of long horns are lengthened  
out and spinulose beyond the smooth base as in  
babylia. Skin granular sparse with minute setae  
same green, the narrow d. groove darker. no marks.  
Aug 9 the short horns had grown out fully as long as the rest

Shed Aug 8 flattened elliptical the radiating horns  
forming a flat disk; d. groove narrow edged  
by the rounded bulbs of horns 4-11, that of 12 small.  
Horn nearly equal 4-6 a little shorter especially  
in front gradually becoming longer posteriorly.  
Green especially the outer 2/3 of the sd horns, the body  
more whitish; d. groove darker. Hairs more numerous,  
all simple on the basal bulbs but of varying  
lengths, shorter around the bases of horns. As the  
end of sd horn many of the hairs are length-  
ened and fine feathery spinulose beyond base  
forming a fringe that fills up the space between  
the flat disk of horns and the leaf. Side  
horns all obscured. Skin setose granular as  
before. The basal part of sd horn is small and  
obscure, dominated by the large nearly spherical  
bulb that corresponds to tubercle i. Green color  
is very like that of the leaf. except 4 & 12 which touch

Shed Aug 22 shape and appearance the same  
Dorsal groove very narrow, the forked bases of  
sd horns almost touching, the two rows of small  
bulbs separated by about their own width. Horns 4-12  
moderately long, horizontal, a little like the ant. ones  
only a little shorter. Whitish green, the distal  
part of horns brighter green. Hairs on the bulbs all  
simple, numerous with enlarged bases. and  
minute setae of long horn simple, all the fringe



fine hair

feathered part of a  
little snout

skin of horns smooth

hair finely barbed beyond the base and many of  
the short hair on dorsal aspect of horn have  
the distal half densely feathered. Hd. now green.  $8 \pm$   
Skin granules small, acute, bearing rather long pale setae.  
Egg shell with chain bridge code. Elliptical, flat; shell  
white, evidently egg colored, transparent  $1.4 \times 1.1$  mm.  
Reticulation faint, angular, apparently as usual.  
Stage 16 The same. All light green, shiny under  
the hairs as as to be a pale glassy color,  
only the very tips of the long horns yellowish green.  
Horns flat, spreading horizontally, the whole horn  
very flat, its dorsal more narrow and edged by the  
circular knobs as before. Ant. pair of sd horns (4)  
are rather shorter and a little curved backward.  
Last pair (12) also rather shorter. This fin white,  
rather long, arising from the adjacent horn  
and fringing the larva all around. Most of the  
marginal hairs are long spinulose, some of them on  
d. aspect and now also around the edges of the knobs.  
Hairs nearly all of the feathered type, at least in part.  
Hairs all on part reduced in length, the tip being  
slender and weak, the shaft a little thickened centrally  
and a black band before the thickening. Even the fringe

hairs are so and  
esp. those on edge of bulbs.  
all the hairs seem to be essentially as modified though those  
on top of bulbs are still pointed, but they are black banded and  
made up into the one on side of bulb. Dorsal  
frontal roots of horns long slender, touching sideways in  
pairs and joining across dorsum, nearly smooth at  
base, the small areas of skin left sparsely granular.  
setae i on a long clear conical base with some smooth  
slender hairs around. ii without accompanying hairs.  
When eating the hood is protruded like a long snout.  
ant 1 on day 18 has also this same hair structure.  
The side hairs are slender, over  $\frac{1}{2}$  the length of the horn  
sd, with a terminal tubercle bearing iii and a number of  
rather slender transparent hairs, some of which toward the  
tips are slightly short-spinulose. No pigmented ones.  
In certain views part of the side hairs are visible from  
dorsal aspect between the long ones, but only with care.  
Horn 2 is directly under 2 23 and is small, hairless except for a small

I 1-1.6 } Taper  
II 1.4-2.4 }  
① ② ③ C.B.

III -2.9 -3.2 -3.8

IV 2.9-5.1 [3.2-4.4] -4.6 3.8-5.0

V 5.1-7.0 4.6-6.3 5-5.2

VI 7.0-9.5 [6.3-8.2] 6.2-7.5

VII 8.2-11 7.5-11.5

VIII 9.5-12.5 11-15.5 11.5-15.5

IX 12.5-17.5

X

XI

XII

XIII

XIV

XV

XVI

XVII

XVIII

XIX

XX

XXI

XXII



